# AGRICULTURAL TRANSPORT ASSISTANCE PROGRAM

# (ATAP)

## Project Number 621-0166

## Impact Study

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## MSI/ATAP ACRONYMS

| | |
|---|---|
| ACET | Association of Consulting Engineers of Tanzania |
| AEPRP | Africa Economic Policy Reform Program |
| AOT | Average Daily Traffic |
| API | Assessment of Program Impact |
| ARD | Associates in Rural Development, Inc. |
| ATAP | Agriculture Transport Assistance Program |
| ATU | Appropriate Technology Unit |
| CFED | Center for Financial Engineering in Development |
| CIP | Commodity Import Program |
| CODAP | Coordination Office for Donor Assisted Projects |
| CP | Conditions Precedent |
| CRB | Central Road Board |
| DANIDA | Danish International Development Agency |
| DANIDA/HIMA | Danida/Hifadhi ya Mazingia (Natural Resource Management) |
| DANIDA/MAJI | Danida/Tanzania Wata (Maji Development Authority) |
| DRIMP | Dar es Salaam Roads Improvement Project |
| DVS | Danish Volunteer Services |
| EEC | European Economic Community |
| ERB/IET | Engineering Registration Board/Institute of Engineer |
| ERB/UDSM | Economic Research Board/University of Dar es Salaam Tanzania |
| FINIDA | Finnish International Development Agency |
| FY | Fiscal Year |
| GOT | Government of Tanzania |
| GVS | German Volunteer Services |
| IBRD | World Bank |
| IET | Institute of Engineering Tanzania |
| ILO | International Labor Organization |
| IRP | Integrated Roads Project |
| MAG | Management Action Group |
| MLGC | Ministry of Local Government & Cooperate |
| MOF | Ministry of Finance |
| MOW | Ministry Works (MWCT) |

| | |
|---|---|
| MSI | Management Systems International |
| MWCT | Ministry of Works, Communications & Transport |
| NCC | National Construction Council |
| NIC | National Insurance Corporation |
| NORAD | Norwegian Agency for International Development |
| NPA | Non Project Assistance |
| ODA | Overseas Development Authority |
| PACD | Project Assistance Completion Date |
| PMO | Prime Minister's Office |
| PSC | Personal Services Contractor |
| REO | Regional Engineers Office |
| RMMS | Road Maintenance Management System |
| RMO | Regional Medical Officer |
| RRD | Rural Roads Divisions |
| SAR | Staff Appraisal Report |
| SDC | Swiss Development Corporation |
| SO | Strategic Objective |
| SSDDP | Small Scale Dairy Development Program |
| TAP | Tanzania Aids Project |
| TSh | Tanzanian Shillings |
| TPDC | Tanzania Petroleum Development Corporation |
| TSh | Tanzanian Shillings |
| UDSM | University of Dar es Salaam |
| UNDP | United Nations Development Program |
| UNICEF | United Nations Childrens Fund |
| UNJCGP | United Nations Joint Consultation Group Program |
| URT | United Republic of Tanzania |
| USAID | United States Agency for International Development |
| VPD | Vehicles Per Day |
| WHO | World Health Organization |

## PROJECT IDENTIFICATION DATA

1. Country: Tanzania

2. Project Title: Agricultural Transport Assistance Program

3. Project Number: 621-0166

4. Project Dates:
   a. First Project Agreement: September 21, 1987
   b. Final Obligation Date: FY-- FY 96
   c. Most recent Project Assistance Completion Date (PACD): December 31, 1997

5. Project Funding: (amounts obligated to date in dollars or dollar equivalents from the following sources)

| | |
|---|---|
| a. A.I.D. Bilateral Funding (grant and/or loan) | US$50.0 million |
| b. Other Major Donors | US$ -- |
| c. Host Country Counterpart Funds | US$ (work-in-kind) |
| Total | US$ |

6. Mode of Implementation: Host Country -- Ministry of Works, Communications and Transportation.

7. Project Designers: USAID/Tanzania and REDSO/ESA

8. Responsible Mission Officials: (for the full life of the project)
   a. Mission Director(s): Mr. Joseph Stepanek
      Mr. Dale Pfieffer
      Mr. Mark Wentling

   b. Project Officer(s): Mr. Fred Guymont
      Mr. Pat Fleuret

9. Previous Evaluation(s):
   1) A Mid-term Evaluation of USAID/Tanzania's Support to the Transport Sector AEPRP and ATAP; REDSO/ESA
      August 19, 1993

   2) Policy Implementation Review of ATAP Agricultural Transport Assistance Program; Associates in Rural Development, Inc.
      September, 1993

## EXECUTIVE SUMMARY

Since 1988, USAID/Tanzania's Agricultural Transport Assistance Program (ATAP) has committed US $50 million for the improvement of rural roads in Tanzania. Through a process of leveraging foreign currency (US$) for policy reforms, the ATAP has consistently encouraged the Government of Tanzania (GOT) to adopt policies, implement new procedures and commit funding for improving road access into Tanzania's key agricultural regions.

This report summarizes the most significant impacts and changes which ATAP actions fostered during its seven year life. This is not to say that ATAP acted alone in bringing about change. On a number of efforts, other donors involved with the $900 million World Bank led - Integrated Roads Project (IRP) also provided support for changes identified by this review. However, in interviews with the GOT officials and other donors, there was general agreement that ATAP conditionality was the primary catalyst for implementing the key reforms. The specific improvements, reforms, and impacts discussed herein fall into four general categories: institutional, financial, road industry, and people level out comes.

**Institutional Impacts.** From the very beginning, ATAP resources have been directed towards assisting the GOT with the implementation of institutional reforms. Evidence gathered during this review confirm that these efforts have paid significant dividends. Encouraged and supported by ATAP resources and conditionality, the GOT has:

- consolidated road policy and management oversight into one ministry from three;
- transferred the responsibility for road construction and maintenance activities from government brigades to private sector companies - starting a major growth industry;
- decentralized responsibility for road operations from headquarters to regional offices;
- initiated a prioritization process which includes social, economic, and environmental criteria in addition to technical factors;
- established a "sustainability analysis" review of projects prior to funding; and
- increased contract award authority of Regional Tender Boards from US$10,000 per project to US$1.0 million per project.

Each of these reforms have dramatically increased the delivery of road rehabilitation and maintenance activities. Additional reforms are in progress.

There is, of course, still room for improvement. A November 1995 audit conducted by GOT auditors concluded that:

- internal controls were inadequate - especially in accounting;
- engineering design of drainage structures needs improving;
- oversight of contractors should be increased; and
- routine maintenance needs to be increased and improved.

The audit did not discover any instances of fraud or any significant waste or mismanagement.

**Financial Impacts**. As a result of ATAP, significantly more funds are now available to pay for road maintenance. Road users today bear an increased share of the cost of maintenance, and the GOT's Ministry of Works, Communications and Transportation (MWCT) is spending Road Fund allocations in a more economical and rational manner.

The Tanzania Road Fund obtains its funds solely from road user charges, primarily from the Road Toll Tax. This is a well designed and administered tax, and is one of the most developed and best functioning road funds established in recent years in Sub-Saharan Africa. The Road Toll Tax is a simple, flat tax applied to all relevant petrol products and diesel fuel sold nationally. The tax is collected by the Government from the petroleum wholesale companies at the time it leaves their bonded warehouses, which facilitates the efficiency and effectiveness of collection. Comparing projected cost estimates from the World Bank IRP studies with current Road Fund collection trends it appears that the Road Fund, as presently structured, will provide 85% of the funds required for future maintenance of the system. The GOT is currently weighing proposals to fund the remaining 15%. If the road network were to be expanded from its currently estimated 85,000 km, additional sources of funding would be required.

**Roads Industry Impacts.** One of ATAP's most notable accomplishments has been its success in convincing the GOT to use the private sector rather than government employed "force account" brigades to carry out road rehabilitation and maintenance activities. As a result, rural road access is rapidly improving and a major new growth industry is being developed. Specific accomplishments include:

- the rehabilitation, by private contractors, of 1700 km of rural roads of which 700 km have been completed,
- the construction/reconstruction, by private contractors, of 126 bridge projects of which 37 have been completed.
- the use of private contractors to perform design and construction supervision activities.

- an increase in the GOT annual level of rural road routine maintenance from virtually zero in 1988 to over 4,800 km in 1994,

- an increase in the GOT annual level of rural road periodic maintenance from virtually zero in 1988 to approximately 400 km in 1994.

- an increase in the number of private road industry contractors from 30 to 500.

In the years immediately preceding ATAP, there were very few, if any, private contractors involved in rural road projects. Today, there are over 100 contractors involved in various phases of rural road improvement at any one time. Almost all of the ATAP rehabilitation and most of the maintenance is now being accomplished by private sector contractors. It is however, still taking too long (i.e. occasionally over one year) to award contracts. This in turn results in cost increases and contractor discouragement. In summary, however, outcomes that might be scored as "good" far exceeds those that should be scored as "needs improvement" and ATAP can be considered a major success.

**Local, People -Level Impacts.** ATAP funded roadworks have had a profoundly positive effect on the income and social welfare of Tanzania's rural population. From information gathered during this review, it is clear that roadwork improvements have been a catalyst that has allowed local populations to participate in the economic changes that are currently underway. Significant improvements are visible in the areas of transport, small business and agriculture, health and family planning. One of the keys to sustaining these positive impacts and further improving rural roads is the continued use of local labor-based crews for the maintenance of these roadworks.

Transportation of people and goods in the rural areas has shown tremendous improvement. For example, on-the-ground studies on several ATAP funded road improvements report that:

- Average Daily Traffic (ADT) on some routes have increased four fold;

- passenger traffic levels have increased up to 10 times;

- passenger fares have dropped as much as 30%;

- vehicle operating costs have decreased by up to two-thirds; and

- travel times have decreased by a half.

Small businesses have also benefitted from the ATAP roadwork. Although several small retailers have closed, they have been replaced by numerous other firms, including retail shops as well as vendors who appear at weekly and/or monthly community markets. Permanent retail shops along improved roads show an increase in daily sales ranging from 50% to 140%.

Agricultural production and sales improve rapidly once ATAP roads are completed. Land values have risen significantly, often doubling or tripling, and farmers have taken advantage of reliable transport to diversify into more perishable though more remunerative crops. Decreased local sales of alcohol are an interesting side benefit of the road improvement program. Rural populations are now easily able to sell their maize and do not have to brew it into beer to improve and sell it. Overall, there are increased sales of crops and increased access to agricultural inputs in areas affected by ATAP.

The health of rural populations appears to have been profoundly affected as well. Respondents report improved levels of health and cite their improved access to health centers as key to this change. People now by-pass ill-equipped local government hospitals and clinics in favor of better private and church facilities. Some of this increase must be attributed to the government's imposition of cost-sharing and the collection of fees for certain services. The decision to patronize a fee for service facility, such as a Mission Hospital, demonstrates that people prefer to go to institutions where they know they will receive better service. Of course improved transport makes this easier to accomplish. In the area of one ATAP rehabilitated road, daily attendance at one well equipped church sponsored hospital is up by 30%, while the government hospital serving this same area reports a 70% decrease in use by those from the ATAP affected area. It is evident from the studies reviewed during this analysis that improved access has positively impacted not only general health care, but family planning services as well.

**Sustainability.** The critical question for USAID/Tanzania is whether the successes achieved during the past seven years can be sustained. Findings developed in this review indicate that they can. This optimistic assessment is based on the teams findings that ATAP led policy reforms have directly developed the critical inputs required to construct and maintain rural roads. For example:

- appropriate policies have been developed and are being implemented.
- an organization capable of managing the rural roads system is in place.
- the level of road management and construction skills is rapidly increasing.
- a mechanism for funding the works is in place and functioning.
- the critical institutional reforms have been accomplished.
- the private sector capacity is large enough to assure competition and accomplish the tasks.
- strong emphasis is being placed on increasing the use of labor based methods for constructing and maintaining rural roads.

Ultimately, however, the sustainability of these accomplishments will be determined by the political will and commitment of the GOT and the Tanzanians. The GOT must continue to provide the resources and management oversight necessary to maintain and improve the system. At the time of this study, the GOT was contemplating the creation of a new parastatal organization called TANROADS. Along with

this reorganization there is an increased emphasis on increasing the level of work accomplished with GOT direct hire or "force account" brigades - even though there is a well documented history of failure in this type effort. These last two issues warrant USAID's continued attention.

# CHAPTER 1. INTRODUCTION

In the mid-1980s, Tanzanian leaders began to realize that their centrally managed, state controlled, economy was stagnated and that it was time to consider major changes in policy and direction. One of the most visible failures was the rapid deterioration of the rural roads network servicing key agricultural areas. This lack of adequate access to farmers placed a critical constraint on the provision of agricultural inputs and the subsequent evacuation and marketing of food and cash crops. To reverse this situation, the GOT developed a draft National Transport Strategy based on the participation of private sector contractors in the construction and maintenance of Tanzania's roads.[1] To assist the GOT with the implementation of this new paradigm, USAID/Tanzania designed a series of programs to provide foreign currency in exchange for policy reforms in the transport sector. One such program, the Agricultural Transport Assistance Program (ATAP), is a prime example of how policy reforms focused on improving rural, unpaved roads as part of an agenda to improve agricultural and economic performance can have a major impact on improving the lives of those living in the rural agricultural regions.

## 1.1 Purpose

The purpose of this study is to assess the impact of the ATAP program on the institutions, private companies, professional organizations, communities, and individuals directly and indirectly touched by ATAP activities. During this assessment, special attention was given to the review of policy reforms that have occurred as a result of the conditionalities attached to each step in ATAP financing. The report also assesses the impact of the ATAP program at the level of the individual farmer affected by these changes. The study also provides insights into how well the ATAP has succeeded in reaching the overall program goals of increasing the volume of agricultural inputs, commodities, and consumer goods transported by road and reducing the costs of transport services.

## 1.2 Study Approach

This assessment documents the impacts created by ATAP at three distinct levels. At the first level, an assessment is made of the impact of ATAP on the:

- GOT institutions that oversee the policies related to, and management of, rural roads.
- policy reforms designed to guide the development and maintenance of this system.
- budgetary process used for financing the system; and,
- the contracting process used to purchase, maintain, support and sustain the rural roads network.

At the second level, the analysis assesses the impact of ATAP on the private construction industry --- those individuals and firms contracted to rehabilitate and maintain rural roads and bridges. At the third

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[1] Ministry of Communications and Works, "Proposed National Transport Strategy," Draft, 1987

level, the impact is measured at the local level; i.e., on the lives of the people affected by ATAP road and bridge works.

Specifically, the USAID Scope of Work posed the following questions:

- What institutional, contracting and financial reforms have been accomplished under the program?
- What have been the effects of the program vis-a-vis the transport industry in Tanzania with reference to costs, margins, and increased competition?
- What have been the effects of these reforms on the rural road rehabilitation and maintenance program?
- What have been the impacts of the rehabilitated and maintained rural roads on the lives of people?
- What have been the effects of these reforms on the Tanzanian road industry?

### 1.3 Methodology

This study was undertaken by a three person team from Management Systems International, which is based in Washington, D.C. To conduct the study, the team used a combination of techniques including:

- review of written documents;
- discussions with Mission staff involved in the program,
- interviews with key personnel at the GOT; and
- discussions with other donors, private contractors, equipment suppliers, and individuals involved in the management and production of the transport sector.

The study began in Washington, D.C., and then continued in Dar es Salaam for the five weeks from Oct. 31, 1995 to Dec. 01, 1995 where an in-country analysis and field review was carried out. While in-country, team members reviewed road works completed and/or under construction in three of Tanzania's 20 regions.[2] Field visits were also made to two regional engineering offices, a regional development office and a district office. The study benefitted especially from the insights of one team member who had spent two years living in a village impacted by the ATAP program.

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[2] See Annex C-Field Visits for comments on the specific sites visited, i.e., Iringa, Morogoro and Dar es Salaam regions.

## CHAPTER 2: OVERVIEW OF ATAP

### 2.1 Background

As stated in USAID's authorizing documents, the goal of the ATAP program is to improve the income and social welfare of the rural population. Its purpose is to support the removal of policy and institutional constraints inhibiting the capacity of the Ministry of Works, Communication and Transport (MWCT) offices to undertake road rehabilitation and maintenance programs.

The constraints which ATAP was originally designed to address included the fragmentation of responsibilities among a number of institutional entities, inadequate funds, unclear policy, a "force account" construction process that excluded private sector entities, and a lack of foreign exchange.

To alleviate these constraints, USAID designed ATAP - - a program vehicle, with a project component, designed to leverage policy reform for foreign exchange. Included in the initial list of conditions precedent were requirements that the GOT:

- increase the 1987/88 National Development Budget allocated to transport by 25 percent;
- reduce the number of Ministries involved in road policy from three to one;
- open up the construction of transport facilities to the private sector;
- prioritize road rehabilitation and road maintenance programs on the basis of economic and social criteria, with no regard to political pressure and/or other considerations.

Following GOT compliance with these conditions, USAID released the dollar funds. Initially the program was managed directly by USAID as a Commodity Import Program (CIP), and was restricted to funding importation of commodities and equipment for the transport sector, in particular the road-subsector. However, as the Tanzanian foreign exchange regime liberalized, the CIP became more general in terms of the range of goods to which it applied and the Government took over day-to-day management of the accounts. Suppliers with whom we spoke were very positive about the CIP. The local Caterpillar dealer reported that if it were not for the USAID supplied foreign exchange in 1990 they would probably have closed their doors.

Designed as a program, with a project component, ATAP was initially funded with $7.2 million of non-project assistance (NPA) and $2.0 million of project assistance (PA) resources . This funding has since increased to the current levels of $46.0 million NPA and $4.0 million of PA.

The elements of the ATAP assistance included: a) rural roads construction; b) private sector contracting, especially for road works; c) decentralization of MWCT activities and functions; d) road maintenance and rehabilitation, rather than construction or development; and e) the use of economic criteria for project/works selection. Steady progress has been made in each of these areas.

## 2.2 Program/Project Status

ATAP's Project Assistance Completion Date is currently being revised to December 31, 1997. With the exception of the final FY 95 tranche, the full US $50 million LOP amount has been obligated. The Conditions Precedent for the release of this final tranche are as follows:

1. evidence that the MWCT has designated 2,000 kms of rural roads in five selected regions (Mwanza, Kilimanjaro, Shinyanga, Iringa and Ruvuma) for priority routine maintenance and 400 kms of rural roads in the same regions for priority periodic maintenance during the period July 1, 1995 through June 30, 1996.

2. evidence that the MWCT has executed contracts from its own resources of at least the shilling equivalent of US $ 1.0 million for routine maintenance and at least US $500,000 for periodic maintenance in the same specified regions from July 1, 1995 through June 30, 1996.

3. evidence that the MWCT has awarded 80% of the shilling volume of the periodic maintenance contracts and 95% of the rehabilitation contracts, in the five regions specified above, to private sector contractors from July 1, 1995 to June 30, 1996.

4. evidence that the MWCT has started to use resources, other than the existing fee levy, for road maintenance.

5. evidence that all routine, periodic and rehabilitation works, funded under ATAP, are contracted out by the Regional Engineers' Offices.

6. evidence that the level of contracting authority of the regional engineers has been increased from the shilling equivalent of $1 million to the shilling equivalent of $2 million.

As of Sept. 30, 1995, US 39.7 million of the planned $46 million of NPA was obligated. The remaining US $6.3 million in NPA funds is expected to be used on road works, and is now expected to be expended by December, 1997. Due to delays in contracting road works during the early years of ATAP, only about Tanzanian Shillings (TSh) 12 billion[3] have been spent to date. However, the pace of contracting is rapidly accelerating now that the main institutional constraints to contracting have been reduced.

A US $4.0 million project assistance component of ATAP was designed to directly support the NPA component by providing funds for technical assistance, training and commodities necessary to improve MWCT management capabilities. Specifically these funds were used to provide:

- long term technical support in the form of a resident advisor in the MWCT for a five-year period, and a Mission PSC Engineer to manage and monitor ATAP activities.

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Current exchange rate is roughly 600 TSh to the US $.

- short-term technical assistance and studies including: development of a road inventory data base; a bridge and structure inventory; economic criteria development; standard maintenance contract development; unit cost analyses for construction works; and analyses of the overall transport sector.

- training for over 100 MWCT engineers, technicians and other support staff in contract management, contract supervision, use of computers, and labor-based construction methods. In addition, ten senior officers of the MWCT have been sponsored at various times to participate in road management seminars and courses in the USA, Ivory Coast, Kenya, Namibia and Spain.

Of the US $4.0 million in project assistance (PA), approximately US $2.7 million have been expended. The remaining US $1.3 million will be utilized to emphasize "decentralization" and "sustainability" activities, the full list of which are still to be developed.

## 2.3 Overview of Physical Works Completed/In-Progress

As stated above, the NPA component of ATAP was designed to provide dollars to be converted to shillings for financing specific road rehabilitation and maintenance projects. To visualize the magnitude of impact created with this funding it is important to have an understanding of the size and composition of the road network itself.

### 2.3.1 The Road Network

The Tanzanian road network is estimated to consist of 85,000 km. This 85,000 km network includes 10,300 km of trunk roads; 20,000 km of regional roads, 24,000 km of district roads and 30,000 km of unclassified roads and tracks. The system that ATAP focuses on, is called the "rural roads system". This rural road system is composed of the 20,000 km regional road network plus 5,000 km of "select district roads" that have been designated to be of major importance for agricultural access. The exact size of the complete road network is currently being determined by an inventory, numbering and mapping project financed by ATAP and managed by the MWCT Management Action Group (MAG). Although ATAP resources and conditionality are directed specifically at the 25,000 km rural road system the impact of any road related policy reform ultimately impacts the entire 85,000 km network.

### 2.3.2 Status of the works

Since 1988, ATAP funds have been committed for the rehabilitation of approximately 1700 km of rural roads as shown in Annex D-1. Segments of this 1700 km of works are in various states of completion. Data derived from the June 1995 Integrated Roads Project (IRP) Monthly Report and MWCT records reveals that at the end of May 1995 some 700 km of ATAP funded road rehabilitation works were completed; 80 km were in progress, 199 km had been recently tendered; 708 km were being

redesigned, and 130 km had been designated for labor-based contracts (some of which have been completed).[4]

Between 1988 and 1992, ATAP funding was restricted to road rehabilitation works. In 1992, the Project Committee, with USAID membership, concluded that a tranche of US $3.0 million could best be used for improving selected bridges and performing periodic maintenance work on key routes into agricultural areas. The bridge work consists of 126 sub projects that deal with new construction, redecking, strengthening of sub- structures, large culvert construction and repair/reconstruction of drifts or fords. To date, 37 critical bridge works have been completed, 47 are in-progress and 42 are being tendered. (See Annex D-2). All of this work is being contracted to the private sector.

In addition to providing funding, ATAP conditionality also requires that the GOT increase the use of its own funds to maintain rural roads. As a result, the GOT annually identifies approximately 2000 km of road for routine maintenance and 400 km for periodic maintenance with GOT funding.

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This totals 1817 km which is 120 km more than the 1697 km (1700?) listed in the GOT records. The difference is believed to lie in the accounting for work completed on the Kilimanjaro I project.

## CHAPTER 3. IMPACTS AT THE INSTITUTIONAL LEVEL

In drafting its 1987 National Transport Policy the GOT recognized that significant institutional reforms in the transport sector were required. Working closely with the GOT, USAID/Tanzania designed ATAP conditionality encouraging the GOT to:

- reorganize and consolidate its transport related ministries,
- decentralize its transport operations, and
- increase the use of private contractors to rehabilitate and maintain rural roads.

The majority of institutional reforms focused specifically on implementing changes in road management policies, contracting processes and operating procedures at the Ministry of Works, Communications and Transport (MWCT).

### 3.1 The MWCT

The MWCT is the GOT Ministry responsible for formulating national road policy and providing management oversight. Since its consolidation in 1990, the MWCT has actively sought ways to improve rural roads management. The Ministry has instituted numerous management systems and created action groups to focus specifically on increasing productivity, and improving operations. Just now when the MWCT is beginning to manage the rural roads system in a professional manner, the GOT is contemplating a plan to replace the MWCT with a new Ministry of Transport. Included in this proposed reorganization is a proposal to create an autonomous, parastatal roads authority. It is not clear when, or if, this might occur.

#### 3.1.1 Policy

The objective of ATAP policy reforms has been to expedite the elimination of constraints to effective and efficient management of the rural roads program. To accomplish this task, ATAP funding has been accompanied with ATAP conditionality. This subsection reviews reforms undertaken at the central, regional and district levels. It also examines the GOT's proposed parastatal roads authority.

##### 3.1.1.1 Central Office reforms.

In 1988, when the design of ATAP was being formulated, there were three GOT Ministries involved in rural road management. The Ministry of Communications and Works (MCW), not to be confused with the current MWCT, was responsible for managing trunk roads. The Prime Ministers Office (PMO) was responsible for rural roads, and the Ministry of Local Government and Cooperatives (MLGC) was responsible for feeder (district) roads. Recognizing that when three organizations are in charge of a program it is probable that really no one is in charge, the USAID project designers required the GOT to produce: "evidence that a Rural Roads Division (RRD) has been established and given national

responsibility for the development, prioritization and implementation of rural roads prior to the release of any USAID funds."[5] This condition was met in 1988 with the creation of an RRD responsible for setting technical standards, and managing rural road policy issues. With the exception of bridge design and approval, most of the planning, operations and budgeting responsibilities were decentralized to the regions. Although there apparently were problems in initiating this decentralization, conversations with engineers in the regions and at headquarters indicate that the system is now beginning to function as designed. The RRD today is staffed with eight engineers plus support personnel. ATAP has consistently supported the RRD with funding for computer equipment, training, and other support requirements.

In addition to the RRD there are several other central units contributing to the achievement of ATAP goals and objectives. MWCT's Management Action Group (MAG) is one. MAG was formed to conduct management initiatives, recommend actions, and monitor progress of improvements in management performance, particularly in the field of maintenance of the road network. Along with several other donors, USAID/T through ATAP, provided the initial funding for MAG and continues to support its activities. For example, at the time of this study, ATAP funding is being used to contract for nine separate activities: preparation of job descriptions; a study on bank guarantees and bonding; a study aimed at the formation of a road contractors association; the development of a professional skills data base; plus four consultancies to survey the unpaved road network, and improve the communications and project monitoring systems. Each of these actions is designed to address a specific management issue.

Also assisting the MWCT with rural road management oversight is the Central Road Board (CRB). This board, established in 1993 by the MWCT Minister, is charged with advising the Ministry on a broad range of road policy and management issues. The CRB meets quarterly and includes members from the private sector as well as most of the interested ministries. MAG serves as the Secretariat to the Central Roads Board.

3.1.1.2 Regional reforms.

Transferring responsibility for road operations from the Central Office to the Regions was a major initiative of ATAP. Working closely with the World Bank and other interested IRP donors, USAID has consistently encouraged the GOT to delegate responsibility for road maintenance, road operations, road budgeting, as well as road design and construction supervision to the regional engineers. To manage this additional responsibility, each of the regions established a rural roads engineer position as shown in Chart 1. Along with the increased delegation of responsibilities to regional engineers, USAID through ATAP, also successfully encouraged the GOT to increase the contracting authority of the Regional Tender Boards from US $10,000 to US $1.0 million per project. This represents a major increase and a very important change. It is reported that these efforts to decentralize initially created considerable rivalry between the two organizational levels, however all of the people with whom the team spoke report that this rivalry is a thing of the past and the units are now functioning as intended.

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USAID PAAD NO. 621-T-602 FOR ATAP OF August 3, 1989.

#### 3.1.1.3 District level.

Approximately 5,000 km of the 30,000 km district road system is included in the MWCT managed rural road system and is heavily supported by ATAP funding. Maintenance and rehabilitation works on the remaining 25,000 km of district roads is funded by the Prime Ministers Office (PMO). This district system is managed by district engineers and does not directly receive ATAP funding. The ATAP impact on this district network is limited to that which results from policy reform, organizational change, and bridge and road works on roads that connect the primary roads to the district routes. Although funding for district roads is still handled by the Prime Ministers office, the PMO is no longer involved in road management.

#### 3.1.1.4 Plans for a New Parastatal Roads Authority

Like organizations elsewhere in the world, the GOT is searching for ways to reduce costs and improve efficiency. In the GOT case, the effort to "reengineer" road management is focused on creation of a parastatal roads authority to be called TANROADS. The principal reasons stated for this reorganization are to: one, integrate transport planning within a new Ministry of Transport; and two, take advantage of more flexible personnel policies to provide incentives to employees for improved performance. At the time of this report, ministry employees were excited about the prospect of an immediate reorganization and increased pay. While both of the reasons given by the GOT for creating TANROADS are worthy, one has to wonder what impact this reorganization will have on the progress that has occurred since the initiation of ATAP. The organization for the new GOT Roads Department, of which TANROADS would be only one element, includes a rural roads office (See Chart 2) staffed with 3 engineers and 4 technicians. However this same organization also includes a "Force Account" office staffed with 12 engineers and 12 technicians. To this team, it appears that this proposal could mean a step backwards from the ATAP program perspective, i.e., a move away from a commitment to using private contractors. It is unclear exactly how many layers of management there would be between the roads department and the head of TANROADS - rumors are that it may be at least four. Four layers is a lot, especially when it comes to such important issues as force account vs. contracting and decentralization of power to the regions. Historically, senior managers are not that enthused about gravel roads, even when the rural roads serve as gateways to agricultural production areas. The newly elected government may or may not continue with the implementation of TANROADS.[6] This entire reorganization proposal bears watching.

### 3.1.2 Process and Procedures

Between 1972 and 1988, rural road rehabilitation and maintenance works were accomplished by government force account crews. The construction that did take place was accomplished on the trunk road network and was contracted to foreign firms with only small portions of the work being performed by local firms through subcontracts. The engineering design for these works was undertaken by either government engineers or by international consultants, hired by the donors. The opportunities for local contractors,

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[6] At the time of this study a new Government was being formed so there were many uncertainties.

consulting engineers and other related professional groups to participate in the process and gain important experience was very limited.

Since ATAP, the processes and procedures used to accomplish tasks in all phases of the planning, programming, budgeting, design, rehabilitation and maintenance tasks have undergone significant change. While each of these phases play a key role in the overall effort, this report focuses on reporting on those which have had the most far reaching impact, i.e. the contracting of rehabilitation and maintenance and the introduction of management systems.

### 3.1.3 Contracting Rehabilitation and Maintenance

Prior to ATAP there was very little contracting of rural road rehabilitation and virtually no contracting of road maintenance. Today, the majority of rural road rehabilitation and much of the maintenance is accomplished through contracts. In interviews with GOT personnel and other donors, this "contracting of work to the private sector" was consistently mentioned as the single most positive change contributing to the improvement of rural road access in Tanzania. This result is directly attributable to ATAP.

With success of course come problems. A number of the earliest private sector contracts encountered time delays of over a year and had cost overruns in excess of 50%. Much of this delay was due to an extremely complex contracting process as shown in Chart 3. Some of the current projects are facing problems with faulty design, however, there is evidence that this situation is improving and regional engineers report that the delegation of increased authority to Regional Tendering Boards is dramatically reducing the time between initiation of tender and actual contract award. Evidence gathered during this review seem to support that opinion. For example, the team reviewed actions taken by the Iringa Regional Board in May 1995 and found that a number of professional decisions were made in the short span of a few hours. It is probable that it would have taken weeks or months to accomplish these same actions had it been necessary to involve the central offices. Delegation of authority to regions has also significantly increased coordination between the GOT's regional engineering offices and its regional development offices.

Historically, as organizations gain experience, efficiency increases and costs decrease. There are indications that this is now beginning to happen in the contracting of road works. A review of contract awards made since 1989, for which data is quite sparse, (see Table 3.1) indicates that costs are trending down. Interviews with contractors also tend to support the teams impression that competition is heating up, and inter-regional competition is beginning to take place. For example, a recent award in the Iringa Region went to an out- of- region firm and three of the seven competitors were from outside the region. Over ATAP's seven years, a major multi-million dollar private industry involving hundreds of players has been created and thousands of km of road are being built and maintained. None of these positive happenings were occurring prior to ATAP.

**Table 3.1 Trend of Rural Roads Unit Costs with Time**

| ITEM | 1989 | 1990 | 1993 | 1994 |
|---|---|---|---|---|
| Length of Roads | 218 km | *266 km | 173 km | 199 km |
| Average Costs of Rehabilitation | $24,318/km | $25,448/km | $22,661/km | 17,527/km |
| **Avg. Unit Costs** | | | | |
| Formation | $2.87/m | $3.06/m | $3.17/m | $2.40/m |
| Graveling | $8.97/cu. m | $9.19/cu. m | $7.80/cu. m | $3.76/cu. m |
| Concrete Culverts 600mm | $94/m | $120.23/m | $85/m | $78/m |

Source: MWCT
* Does not include Kilimanjaro I which is in dispute.

Having said this, it is also important to note that much still remains to be accomplished. There are still too many people involved at too many levels in the review and approval process, many of whom have little incentive to move the process along. In reviewing one contract package,[7] the intent was to initiate work in October 94, however, today, in November 95, the contract documents are still not signed and escalation clauses have increased the cost by 40%. In this instance, and in several others, it was difficult to identify one specific action that caused the delay, rather it appeared that no one stepped forward to take charge of the contracting decisions.

### 3.1.3 Management Systems

To improve the planning and delivery of services, ATAP has placed considerable emphasis and resources on the creation and improvement of management systems. The ATAP funded long term technical advisor was a strong proponent of the use of systems and this work is now being continued by the MAG. A large number of systems have been put in place and many others are being planned. Some of the more important include:

- a Road Maintenance Management System (RMMS): This will be a spreadsheet formatted document for the planning and monitoring of routine, periodic, and emergency maintenance.

- a Contract Monitoring System: This is a computerized system to monitor the progress (time and costs) of all on-going contracts. It will graphically compare planned versus actual and identify problem areas to be monitored.

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Various contracts in the Ruvuma Region.

- a Bridge Maintenance Management System: This system is intended to be used in coordination with the RMMS for purposes of tracking bridge planning, design and construction activities and comparing planned versus actual cost and time .

- a Unit Cost System: This system is designed to provide average costs for estimating purposes so that engineers estimates will be more uniformly developed. It is also designed to provide guidance for analysis of tenders.

Also at ATAP's insistence, social, economic and environmental issues are now required elements of any planning equation. These analytical processes combined with increased professional judgement will significantly increase the problem solving capacity of the MWCT. ATAP has played a major role in making this happen.

## 3.2 Financial

ATAP has also encouraged the adoption of important policy and institutional reforms aimed at improved financial resource utilization. These reforms have resulted in increasing the funds being made available for road maintenance and improving the manner in which the Ministry applies the resources to carry out the actual work.

### 3.2.1 Policies

ATAP has encouraged important financial policy and institutional reforms to address road rehabilitation and maintenance resources. These reforms have included actions aimed at both: the allocation of funds to the MWCT for the purposes of road rehabilitation and maintenance, and the manner in which the Ministry applies the resources to carry out the actual road works.

Policies for mobilizing and allocating sufficient resources to road maintenance have been encouraged through ATAP Conditions Precedent (CPs). In the early ATAP period, such conditions focused on encouraging Government to allocate adequate resources from its general, recurrent budget for the purpose of road maintenance. Thereafter, ATAP progressed to supporting a policy framework in which road user charges were targeted to cover maintenance resource needs, and specific, known resources were earmarked. Currently, ATAP conditions require evidence that the MWCT has started to use resources, other than the existing fuel levy, to fund road maintenance. While ATAP never actually required the establishment of the Road Fund per se, the Road Fund was the mechanism through which the GOT met ATAP policy conditions in the resource mobilization area. To this extent, ATAP can be said to be responsible for the performance and consequences of the Road Fund.

In addition, ATAP has assisted the Ministry to make better use of the allocated financial resources. Much of this improvement can be attributed to Ministry efficiencies resulting from ATAP provided technical assistance and training. Specific activities which have made an impact include: the unit cost study for road maintenance and rehabilitation works which provided the Ministry with guidance on cost parameters and

the establishment of conditions requiring that the Ministry apply economic criteria for prioritizing rehabilitation and maintenance activities, thus ensuring a better use of scarce financial resources.

### 3.2.2 Revenue Performance

The Road Fund in Tanzania obtains its funds solely from road user charges, primarily from the Road Toll Tax.[8] Road Toll Tax is somewhat of a misnomer since it has nothing to do with toll-rather it is simply a tax. This is a well designed and administered tax, and is one of the most developed and best functioning road funds established in recent years in Sub-Saharan Africa. The Road Toll Tax is a simple, flat tax which is calculated on the basis of physical volume, i.e., liters rather than more complex formula based on the value of the product. The tax is applied to all relevant petrol products and diesel fuel sold nationally.[9] The tax is collected by the GOT from the petroleum wholesale companies at the time it leaves their bonded warehouses, which facilitates the efficiency and effectiveness of collection. The tax places the highest effective rate on diesel, which is presumed to have a disproportionately heavy use by larger, commercial vehicles that cause the greatest damage to the road infrastructure.

Total revenue collected on motor vehicle taxes and licenses in Tanzania has increased substantially since 1990/91. This is in large part due to the establishment and performance of the Road Toll Tax. Overall revenue collected for motor vehicle taxes and licenses increased from about TSh 2 billion in fiscal year 1990/91 to nearly TSh 25 billion in 1994/95 as shown in Table 3.2. The Road Toll Tax revenues rose from TSh 3.7 billion in 1991/92, its first full year in effect, to over TSh 21 billion in 1994/95. It accounted for about 60% and 85% of total collections in 1991/92 and 1994/95, respectively. The other sources of vehicle tax revenue represent less than 15% of the total tax revenue in 1994/95, and are not currently sources of revenue for the Road Fund.

**Table 3.2: Revenue Collected on Motor Vehicle Taxes and Licenses** (TSh millions)

| Budget Code | Category | 1990/91 | 1991/92 | 1992/93 | 1993/94 | 1994/95 |
|---|---|---|---|---|---|---|
| 1301 | MV Licenses | 567.4 | 934.3 | 1,365.4 | 1,835.5 | 1,440.7 |
| 1302 | MV Registration Tax | 81.1 | 90.6 | 239.7 | 488.5 | 695.5 |
| 1303 | MV Tax on Transfer | 119.1 | 776.8 | 445.5 | 379.1 | 608.7 |
| 1304 | Car Benefit Tax | -- | 314.1 | 557.0 | 879.8 | 529.9 |
| 1306 | MV Road Licenses | 349.1 | 407.7 | 596.3 | 1,090.3 | 35.9 |
| 1307 | Surtax | -- | -- | -- | 915.6 | 371.0 |
| 1309 | Road Toll Tax | 862.2 | 3,689.3 | 6,830.5 | 15,413.1 | 21,198.5 |
| | TOTAL | 1,978.9 | 6,212.8 | 10,034.4 | 21,001.9 | 24,880.2 |

Source: Ministry of Finance, Revenue Section; and consultant's calculations.

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Roads work was dropped from the national recurrent budget of the Treasury after 1991/92, the first full year of operation of the Road Fund.

Zanzibar is exempt from the tax as it does not participate in the Road Fund.

The Road Toll Tax has been increased in nominal terms several times since its introduction. Established in July, 1991 at TSh 7 per liter the tax has been increased seven times since, increasing most recently to TSh 50 per liter in July 1995. Increases in the Road Toll Tax have out paced the rate of increase in the retail price of the relevant fuels since the beginning of 1993, thus increasing the effective tax rate. For example, the tax as a percentage of the retail price has increased by two thirds in the case of both premium and regular petrol and by about a half in the case of diesel between January 1993 and June 1995 as shown in Table 3.3. In addition, the Tax has the heaviest impact on diesel fuel, i.e. nearly 19% of the Dar es Salaam retail price in June 1995, in comparison with 15% on the retail price of premium petrol.

**Table 3.3: Road Toll Tax Incidence, by Petroleum Product Type**

| Effective Date of Road Toll | Road Toll Tax Level (TSh) | Premium Petrol (MSP) | Regular Petrol (MSR) | Diesel Fuel (GO) |
|---|---|---|---|---|
| 16 Jun 1995 | 50 | 14.9% | 15.4% | 18.8% |
| 25 Dec 1994 | 40 | 12.3% | 12.7% | 16.4% |
| 17 Jun 1994 | 35 | 12.9% | 13.5% | 16.6% |
| 4 Oct 1993 | 30 | 12.0% | 12.6% | 15.7% |
| 18 Jun 1993 | 25 | 11.2% | 11.7% | 16.1% |
| 1 Jan 1993 | 20 | 9.0% | 9.4% | 12.9% |

Source: Compiled from private transporters data.

Collections performance of the Tax appears to have improved substantially in recent years. The GOT is estimated to have collected only 86% of the revenue it should have received in calendar year 1992. Whereas there was an estimated 99% collection performance calculated for 1993, and about 100% in 1994. However, given the calculation method and data sources shown in Annex Table D-3, the precise figures must be treated with caution. Nonetheless, collections performance seems to have closed the gap from an apparent and unexplained shortage of 11-14%[10] in 1992 to negligible amounts in 1993 and 1994.

While other taxes and fees imposed on the road transport sector are not currently sources of revenue for the Road Fund, Government has nonetheless made progress in broadening the tax base related to motor vehicle taxes and licenses over the last five years, and improved rationalization of the tax regime. Newly introduced tax categories include the car benefit tax and the surtax on the transfer of vehicles. At the same time, the motor vehicle road license tax was abolished in 1995, in part as it was seen as duplicative with the purpose of the road toll tax and due to its convoluted structure with excessive vehicle categories. Concomitantly, the level of fees for transport licenses for commercial vehicles were increased substantially.

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This range results from the current estimate of 14% and the 11% calculated in the ARD Report of September 1993 which used preliminary, unadjusted figures for the 1992/93 period.

The impact of the current tax and license regime seems to be well targeted on heavy users and those which are likely to cause the greatest levels of deterioration to the road infrastructure. For example, the increase in transport license fees for commercial vehicles penalizes most heavily the larger, freight-oriented vehicles, and their rates have increased by as much as fivefold or more in some cases as Annex Table D-4 illustrates.

There are other taxes, outside the budget code 1300 shown in Table 3.2, that are imposed directly or indirectly on road users when they purchase and/or operate vehicles. These include sales and excise taxes on fuels, as well as sales and excise taxes and customs duties applied to the purchase of vehicles, spare parts, tires, lubricants and other goods used for vehicle operation and maintenance and repair. However, none of these are earmarked for the Road Fund, but rather contribute to general treasury tax revenues. There are no specifically earmarked funds for road maintenance outside the Road Fund.[11]

A policy issue remains as to whether the range of levies and duties on motor vehicles earmarked for the Road Fund should be broadened, as provided for in the original ordinance that established the Road Fund. This in part depends on whether the Road Toll Tax is deemed sufficient, the extent to which other tax categories can be assumed to be directly correlated with road usage, and at what stage the overall level of taxation of transport might be considered to be excessive. Broadening the Road Funds sources of revenue beyond the Road Toll Tax is a Condition Precedent of the current ATAP program tranche.[12]

Between 1993/94 and 1994/95 there was a slowing in the rate of increase in overall motor vehicle tax and license collections. This brings into question whether the absorptive capacity of the road transport sector to be taxed is being approached. The declining growth rate appears to be related mainly to:

- the relative timing of introducing some new or raised taxes with the abolition of others;
- a fall in the number of vehicles registered, which dropped from a high of 16,900 in 1992 to an estimated 12,000 registrations in 1994[13]; and
- a slight decline in the level of consumption of the fuels to which the road toll tax is applied.

The first cause will probably have a short-lived effect, whereas the other two underlying causes may reflect more fundamental factors. The drop in the number of vehicles licensed may be due to a worsening environment for the purchase and/or operation of vehicles, or perhaps just a failure on the part of owners to obtain licenses. The drop in consumption of the relevant fuels may be due to a myriad of causes:

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Government makes no general budget allocations out of the recurrent budget for the purposes of road maintenance, and the Road Toll Tax is currently the only source for the Fund.

ATAP Program, Amendment Nine.

Estimates from the Consultants report to NTC on the “Vehicle Fleet in Tanzania in 1994", dated 1995.

changing overall economic environment; fewer vehicles on the road; less kilometers driven annually per vehicle; the dampening of demand for fuel due to the tax level itself, or a combination of a number of these factors.

### 3.2.3 Road Fund Transfer and Expenditure Profile

The MWCT has been the major beneficiary of the road toll tax. The amounts received by MWCT have increased substantially, and the regularity of receipts from Ministry of Finance greatly facilitate MWCT's programming of road works. The time it takes to transfer funds from the Road Fund to MWCT has diminished and stabilized at a reasonable level. However, it does not appear that MWCT has always received its full 80% allotment of the Road Fund in each year.

- MWCT records showed that it received TSh 5.3 billion, TSh 9.6 billion and TSh 16 billion, in 1992/93, 1993/94 and 1994/95, respectively. These represent annual growth rates of 117%, 81% and 66%, respectively.

- The average lag between the month for which the road toll allocation is being collected and the actual date of transfer of the funds to MWCT has declined from approximately 58 days in 1991/92, to 29 days in 1992/93 and 34 days in 1993/94 as detailed in Annex Table D-5. The Programming Section of MWCT ceased to keep this data for 1994/95, as a new payment system was adopted (see below). However, MWCT staff indicate that the lag has stabilized to between 15 and 30 days, perhaps with the exception of the few months leading up to national elections during which the lag may have increased.

The monthly allotment system shifted over to a formula in 1994/95 whereby a fixed, equal amount of funds were transferred each month, i.e. TSh 916.7 million per month, with periodic additional adjustments made to account for higher collections in the Road Toll Tax as shown in Annex Table D-6. This has the advantage of letting MWCT know well in advance the actual amounts to be transferred to it. The system also has shortened the lag for transfer, because the GOT needs relatively little time to reconcile tax collections prior to transferring MWCT's monthly allotment. However, it has the disadvantage that the Road Toll Tax performance may vary significantly from expectations, and thus leave MWCT with an unforeseen surplus or deficit to program.

In principle, all of the Road Toll Tax collections are deposited into a special account, the Road Fund. MWCT is then to receive 80% of the funds, with the remaining 20% being allocated to the PMO which is responsible for district-level roads. Notwithstanding some definitional issues with calculating MWCT receipts in a given year as shown in Annex D-7, the MWCT received less than 70% of the Roll Toll Tax collection in 1991/92 and 1993/94, but much closer to the requisite 80% in 1992/93 and 1994/95 as shown in Table 3.4.

**Table 3.4: MWCT Share of Total Road Toll Tax Collections** (TSh. millions)

| | 1991/92 | 1992/93 | 1993/94 | 1994/95 |
|---|---|---|---|---|
| Road Toll Tax Collections | 3,689 | 6,830 | 15,413 | 21,198 |
| MWCT Collections Receipts | 2,464 | 5,335 | 9,630 | 16,008 |
| MWCT Share of Total | 67% | 78% | 62% | 76% |

Source: Revenue Section for tax collections; MWCT records for collections receipts.

The Road Fund allocations to MWCT are meant to be expended by MWCT on road works in a systematic and rational manner, based on economic criteria for the prioritization of uses and projects. Road Fund money is allocated to each region both according to type of roads e.g. trunk and rural, and to the purpose for which the funds are to be spent, i.e. periodic or routine maintenance as well as emergency or spot repairs. The hierarchy adopted by type of activity is:

- first, periodic maintenance expenditures,
- then emergency repairs, and
- finally routine maintenance spending.

Road Fund money is not spent on construction of roads, as it is designed essentially as a user charge to cover recurrent expenditures related to maintaining roads. The ATAP project, as previously discussed, was substantially responsible for the adoption of these practices, by both making it a policy condition as well as providing technical assistance for its implementation.

The MWCT keeps records on the regional allocation of Road Fund resources, both by region and by the nature of the work undertaken.[14] Total expenditures by MWCT of Road Fund money was estimated at TSh 2.06 billion in 1991/92, TSh 5.13 billion in 1992/93, TSh 9.07 billion in 1993/94 and TSh 14.29 billion in 1994/95.[15] Three distribution aspects are examined below: (1) distribution by region; (2) distribution by type of work; and (3) distribution by region compared to regional road toll tax burden.

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While data is kept in fairly detailed form, it is full of arithmetic inaccuracies, mis-labeling and perhaps other inadequacies.

It should be noted that expenditure figures do not necessarily equal MECT allocations from the Road Fund in a given year, due to disparities in the timing of receipts and expenditures.

3.2.3.1 Distribution by Region.

All regions have received some Road Fund expenditures in each of the four complete fiscal years of the Fund's existence as shown in Annex D-7. However, the largest share goes to the combination of the Dar es Salaam and the DSM regional headquarters. This is in part due to the fact that many contractors undertaking works in the regions are actually paid from the central Ministry, and thus the expenditure appears in the DSM/HQ line item. However, in addition, DSM/HQ's share of total expenditures has been rising throughout the four-year period, and reached 46% of total expenditures in 1994/95, up from about 30% in 1992/93 and 42% in 1993/94. Recording where the actual expenditures take place is important to ascertain the full inter-regional implications of the Road Fund program in the MWCT.[16] Of the other expenditures in 1994/95, each of the other 19 regions received between a 2% and 4.3% share of total expenditures, with a fairly even distribution across regions.

3.2.3.2 Distribution of Type of Work.

For each region, the MWCT maintains records of expenditure categories, by month, for each fiscal year. The categories monitored include: routine maintenance; periodic maintenance; spot improvement; emergency for both trunk roads and rural roads; a category called "Road Board Cost"; and another, the "Dar es Salaam Roads Improvement Project (DRIMP)".[17] Annex Table D-8 shows a distribution of expenditures, by region, works category and class of road, for 1993/94 and 1994/95. Roughly even amounts are expended on trunk versus rural roads, with trunk roads typically receiving slightly more. In both years, more than 50% was expended on routine maintenance, 23% to 30% on emergency maintenance, and finally between 15% and 21% on periodic maintenance. This relative expenditure pattern across activity types is the exact opposite of the priority with which road maintenance funds are meant to be spent. In 1994/95 only three regions expended the highest share of road fund allocations on periodic maintenance. These were Coast, DSM HQ and Tabora. In Iringa, Mtwara, Rukwa and Tanga a third or more of the allocated funds were spent on periodic maintenance, but it did not represent the category in which the most was expended.

3.2.3.3 Distribution of Expenditures Compared to Imputed Tax Burden.

The share that each region receives of total Road Fund expenditures compared to the amount of relevant petroleum products sold in the region gives a rough estimate of the "return" on imputed Road Toll ax burden. To minimize anomalies between years or due to scale, the average value of 1993/94 and 1994/95 shares of both expenditures and volumetric sales of petrol (both grades) and diesel fuel were estimated, and then expressed as a ratio as shown in Annex D-8. Thus, regions for which the ratio is less than one indicates that the region received less than its proportional shares of expenditures in comparison

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This does not seem to have been done, or at least not institutionalized, despite such a recommendation being made in the ARD report of September, 1993.

Summary tables which show annual expenditure by region and type of expenditure are not readily in evidence at MWCT.

with its estimated share of the Road Toll Tax burden. The Regions meeting this definition are termed "deficit regions". Regions with ratios exceeding a ratio of one, are termed "surplus regions". Using these measures and erring on the conservative side due to possible inaccuracies in the underlying data, Arusha, Iringa, Kilimanjaro and Mwanza can be classified as "deficit areas". Surplus areas include Coast, Lindi, Mara, Rukwa, Ruvuma and Singida. This element of "cross-subsidization" is not cause for concern, as long as rational and economically based criteria are being used to allocate funds. However, presumably regional sales of petrol and diesel are positively correlated with road use in that region.[18] Thus, as Road Fund money is for maintenance, one would expect there not to be extreme deficits or surpluses in any given region.

### 3.2.4 MWCT Resource Requirements

The MWCT's ability to meet current and future resource requirements is key to determining the sustainability of the road maintenance program. This issue can be addressed at several levels, and depends on: a) the extensiveness of the road network to be maintained, and at what level; b) the average cost of works undertaken and the trend thereof; and c) examining the growth in, and range of, appropriate sources of revenue for paying for the maintenance of the network. In this section, primarily the third element is examined, namely the scope for revenue enhancement as measured against the "status quo" in unit costs and assumed maintenance expenditure requirements as shown in Annex D-9.

The road maintenance requirements for the 1994/95 to 1999/2000 period, for all periodic and routine maintenance, were calculated by MWCT during the appraisal period of the IRP-II project in late 1993. At the time, the projections of Road Toll Tax revenue indicated that it would provide only about 65% of forecast resource needs. Four strategies for closing this resource gap were identified: a) improve the Road Toll Tax collections performance; b) increase the Road Toll Tax rate; c) a combination of these first two measures; and d) designate other tax categories as sources of revenue for the Road Fund.

By late 1995, the Government had improved collections performance and increased the Road Toll Tax rate, such that the Road Fund now covers about 85% of road maintenance budget requirements of MWCT as Table 3.4 illustrates. These estimates assume that the revenue from the Road Toll Tax will grow by 4% per annum, which is well below its historic rate. However, as discussed above, the rate of increase in recent years has been diminishing, and the capacity of the road transport sector to absorb increases is not without limit. It further assumes that the estimates of the required maintenance budgets still holds,[19] and that MWCT continues to receive 80% of Road Fund allocations.

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One would expect a positive correlation, but not necessarily a "steep" coefficient, as some regions may be preferred re-fueling points for inter-regional traffic.

No further official estimates of maintenance budget requirements have been made by MWCT, to the best of the consultant's knowledge. However, notes from MAG meetings indicate that the SAR figures may be lower than current estimates.

**Table 3.4: Estimated MWCT Road Maintenance Resource Gap**
(TSh millions)

| | Estimated Maintenance Costs | Road Toll Tax Collections | Coverage | Net Funding Needs | Revenue: Other Sources | Resource Gap |
|---|---|---|---|---|---|---|
| 1994/95 | 20,556 | 16,959 | 82.5% | 3,597 | 2,334 | 6.1% |
| 1995/96 | 20,622 | 17,638 | 85.5% | 2,984 | 2,385 | 2.9% |
| 1996/97 | 20,946 | 18,343 | 87.6% | 2,603 | 2,438 | 0.8% |
| 1997/98 | 21,660 | 19,077 | 88.1% | 2,583 | 2,492 | 0.4% |
| 1998/99 | 23,304 | 19,840 | 85.1% | 3,464 | 2,547 | 3.9% |
| 1999/00 | 25,116 | 20,633 | 82.2% | 4,483 | 2,604 | 7.5% |

Source: IRP-II Staff Appraisal Report; and consultant's calculations.
IRP-II Staff Appraisal Report; and consultant's calculations.

The remaining 15% gap still needs to be closed, in order to achieve the policy objective of having the road users fund 100% of road maintenance budget needs. Expanding the sources of taxes and fees used as the revenue base for the Road Fund, i.e. broaden the tax base, is the most feasible means for closing the gap, and is already provided for within the same Ordinance that established the Road Fund. There are also policy choices in terms of whether the expanded tax base targeted is an appropriate source and fairly places the burden of paying for road maintenance on those users most responsible for causing the damage to the road infrastructure.

The resource gap can be closed to an average of about 3.5% of projected needs if commercial vehicle licenses and vehicle transit charges are added to the Road Fund, as outlined in Table 3.4, which is the current proposal under consideration by Government.[20] The projection of revenue from commercial vehicles licenses assumes: a) the increased July 1995 fee rate structure is maintained; b) Road Fund allocations come from vehicle license fees on heavier vehicles, but not on passengers cars or motorcycles; and c) the vehicle fleet expands by an average of 2% per annum. The transit charges are levied on foreign registered vehicles upon entry into Tanzania. The charges are only for vehicles with an above 3-ton carrying capacity, are charged per 100 km of journey, and differentiates between vehicles with more than 3 axles. As a result, both revenue sources appear appropriate in terms of taxing road users, and especially those which most heavily cause wear on the roads.

The remaining resource requirement is, on average, TSh 820 million per annum, through to the year 2000, or a gap of about 3.5% of the estimated needs which is very positive for a developing country. The sustainability of the Road Fund and other means for funding the road maintenance gap are addressed in Section 6.2.

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A recent study conducted by NTC recommends these two sources of revenue and makes some of the underlying calculations.

## CHAPTER 4. IMPACTS- ROADS-RELATED INDUSTRY

During the two decades preceding ATAP, virtually all of Tanzania's road work activities, including the design, construction, supervision, and maintenance, was accomplished by the GOT. Today much of this work is performed by the private sector. Some of the more important actors, and the roles they play, are briefly described below.

### 4.1 The Consulting Engineers

Tanzanian consulting engineers fall into two fairly distinct groups. There are the twelve or so firms that comprise the Association of Consulting Engineers Tanzania (ACET) and employ over 100 engineers and 300 support personnel. In addition, there are another 20 or so small non-ACET firms working in this field. One reason for this separation in groups is that members of ACET must meet certain "length-of-experience" criteria whereas many of the non-ACET consultants have been unable to gain the "length-of-experience" required, simply because, prior to ATAP, there were few opportunities for them to gain the experience. Although ACET leaders have taken steps to revise their constitution to make it easier for the small firms to join ACET, ATAP projects are now making it possible for these firms to gain the required experience.

Prior to ATAP virtually all Tanzanian rural road design and construction supervision was performed by government engineers. This is no longer the case. USAID through ATAP, has led the way to open this business to the qualified, local, private consulting engineering firms. First, ATAP project managers established the requirement that all supervisory work on the USAID funded projects was to be contracted with local consultants. Soon thereafter, when it became evident that the road designs prepared in the mid-1980's needed serious updating, USAID required that this work must also be contracted to local firms. As a result of these actions ten separate Tanzanian firms have won contracts over the past five years to design or oversee 25 separate projects. Other donors are now also beginning to utilize local firms for design and supervisory work on their road projects. This of course increases employment opportunities for local engineers and permits them the opportunity to gain the prerequisite experience required for their registration. A review of 28 recent "short list" procurement actions in Tanzania shows that out of 63 consulting firms that competed, 24 of these firms were Tanzania.[21] While several of these firms have already been chosen, a number of awards are still outstanding. Considerable progress is being made.

### 4.2 Road Contractor Industry

To compete for government contracted road work in Tanzania, firms are required to document that they have the equipment, financial capacity, and experience to carry out this type work and to register as potential contractors. This registration process which is managed by the parastatal National Construction Council (NCC), certifies firms in several different categories and for various size projects. In the Civil Engineering category, which includes roads and bridges, but not buildings, there are five levels ranging from

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List of Tanzanian contract competitions audited by ACET.

asphalt paving, through bridge construction and, at the lower end, petty contractors. Petty contractors are those contractors qualified for work costing less than US $ 50,000. When ATAP design was initiated, the number of local contractors registered as qualified for road works was less than 30. Of these only six were judged capable of handling major road works and five of these were in Dar es Salaam. Today there are over 500 Tanzanian firms registered in the Civil Engineering category including many in the rural areas where ATAP projects are being constructed and maintained. Chart 4 provides a schematic summary of the Tanzanian roads industry.

## 4.3 Construction Equipment Suppliers

A recently completed study done for the MWCT identified road equipment availability and needs required to support the currently planned road projects. Results from the study reveal that there are currently 119 motor graders, 58 rollers in the 8-10 tons category, 99 bulldozers, and 102 wheel loaders of the type that are used on ATAP type projects in Tanzania. The study also revealed that a majority of this equipment is in need of major repair. The "needs" section of the report concludes that there is a shortage of 50 graders, 47 rollers, 11 bull dozers and 12 loaders just to accomplish the work already committed for 1995/96. However, contractors are beginning to purchase new equipment. One MWCT office noted that over 20 new graders were brought into the country during the past year. Two of the five largest ATAP contractors reported they purchased new graders since they were awarded projects. Although there is a major shortage of road equipment in Tanzania most of the contractors reported that spare parts are, for the most part, available. Many of the contractors interviewed credit ATAP for this improvement.

## 4.4 Ancillary Organizations

In addition to the contractors, consulting engineers, and equipment suppliers there are several other key organizations that play an important role in conducting ATAP type work.

### 4.4.1 National Construction Council

The National Construction Council (NCC) serves as the registration bureau for MWCT contracted works; conducts technical studies for MWCT; and provides construction related training. Most recently, the NCC received approval to hire seven new engineers to assist in the donor supported labor-based contractor training program. ATAP was one of the first funding programs to support labor- based training and although it got off to a rocky start it is now moving forward and being expanded. The use of labor- based methods to rehabilitate and maintain roads is considered by the government (and this study team) to be a key part of the strategy for improving rural roads. If overhead costs are properly controlled, and it would probably be wise to audit them, labor- based methodology is one of the least cost methods for rural road maintenance. The NCC is also involved in developing a National Construction Industry Development Strategy. When completed, this strategy is intended to provide the vision and direction for the Tanzanian construction industry into the next century.

### 4.4.2 Engineering Registration Board and the Institute of Engineers Tanzania

The Engineering Registration Board (ERB) and the Institute of Engineers Tanzania (IET) are responsible for professional registration and the continuing professional development of Tanzania's engineers. With the help of ATAP and other donors the IET/ERB has formed a Joint Training program to enhance the professional competence of engineers in Tanzania and to assist them with meeting the requirements for professional registration.

There are 897 registered professional engineers in Tanzania. Of these, 617 (68%) are Civil and 121 (14%) are Mechanical. Together these two categories represent 82 % of the total and are the skills most used in road construction. It is interesting to note that of this total, 265 (30%) were registered between 1985 and 1989 when, according to the people at ERB, word began circulating that some of the donors were thinking about using local engineers. The rate of civil and mechanical engineering registrations since that time has continued at a uniform rate.

# CHAPTER 5 .PEOPLE IMPACTS AT THE LOCAL LEVEL

## 5.1 Rural Population Impacts

The policy and institutional reforms undertaken through the ATAP program were focused on achieving a specific goal, i.e. "to increase the income and social welfare of the rural population" To measure program success the team focussed on answering a number of specific questions such as:

- What are the impacts of ATAP on incomes, health, and education?
- What are the impacts of ATAP on the well being of the rural people affected by the roadwork undertaken through ATAP?
- Has the volume of agricultural commodities and inputs and consumer goods been expanded through a reduction of the cost of road and transport services, thus enhancing social welfare of the rural populations?

For the most part, answers to these questions were obtained from baseline and accompanying impact studies for three roads and four bridges rehabilitated under ATAP in very different regions of Tanzania. Even though the number of field studies completed is limited, it is clear that the ATAP funded road rehabilitation work has had a profoundly positive effect on the lives of the local people.

Statistics quoted herein are those collected by the USAID sponsored research teams or taken from Tanzanian government statistics and confirmed by onsite investigation by these same teams. Problems with government statistics have been on-going but in recent years have been exacerbated by lack of a monitoring system capable of coping with the rapid change. As a result, much of what is presented are correlations only and establishing ATAP roadwork in a causal relationship to reported "impacts" may be considered by some as problematic. As one commentator noted, "Issues relating to market liberalization, removal of subsidies from credit and inputs, cost recovery for social services, privatization of marketing networks and retrenchment of village level personnel all contribute to blurring causality in relation to assessing the cause of impact of rural roads or other programs". However, to most people interviewed for this and prior studies, it is clear that the roadworks are the vehicle that has allowed the local people to participate in the economic changes currently underway.

The rehabilitated roads for which both baseline and impact studies have been completed[22] are the Njombe-Makete Road (Iringa Region), the Kwa Sadala-Mbweera Road (Kilimanjaro Region) and the Kanawa-Kalitu Road (Shinyanga Region). Baseline studies and one impact study have been completed

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[22] All of the data quoted in this section come from the baseline and impact studies completed to date. Unless otherwise noted sources are: a) Njombe-Makete baseline, Strauss et al 1993; impact, Lucas et al 1995; b) Kwa Sadals-Mbweera baseline, Agriconsult 1990; impact, Shirima et al 1993; c)Shinyanga baseline, Agriconsult 1990; impact, Strauss & Likwelile 1992; d)Mkondoa Bridge Sumra 1994; e)Chazi II Bridge Porter 1994; f)Kinyerezi Bridge baseline Porter 1994 and impact data from team field visit November 1995; g)Kirare Bridge baseline (Tanga), Rutachokozibwa 1995.

for four bridges under ATAP: the Mkondoa Bridge (Kilosa, Morogoro Region), Kirare Bridge (Tanga, Coast Region), Chazi II Bridge (Turiani, Morogoro Region) and the Kinyerezi Bridge (Dar es Salaam Region). These areas represent a diversity of agricultural systems whose crops are important not only as income sources for the regions and the country as a whole but are important parts of the Tanzanian national food basket.

Agricultural production for sales represented by the areas affected by the road and bridge rehabilitation works are:

- Njombe-Makete road (Iringa): wheat, potatoes, maize, pyrethrum, fruits;
- Kwa Sadala-Mbweera road (Kilimanjaro): coffee, bananas, vegetables;
- Kanawa-Kalitu road (Shinyanga): cotton;
- Chazi II Bridge (Morogoro): sugar cane; Kirare Bridge (Tanga): tropical fruits; and Mkondoa Bridge (Kilosa): maize and beans.

The goals of the following analyses are to highlight: a) the economic impact of the rehabilitation of roads and bridges under the ATAP program in both a quantitative and qualitative manner; b) the impact of these improvements on community services in the affected areas: and, c) the impact of road improvements on the local cost, availability and reliability of transport. Through this analysis it will also be shown how ATAP has managed to help USAID/Tanzania meet its Strategic Objectives.

## 5.2 Local Transport & Travel

Key to the overall impact of the ATAP funded roadwork lies in the transportation improvements it has brought about. All impacts noted flow either directly or indirectly from the people's increased ability to get themselves and their goods where they need to go and when they need to get there. Access to markets, to health care and family planning, to channels of government, among other things, is directly linked to the villagers' ability to get transport from one place to another. The comparison of baseline study data and impact assessment data confirm that on ATAP rehabilitated roads there has been a tremendous increase in access to and use of transport. Although a good deal of local transport is still carried out by head loading or on foot, respondents noted that villagers report that the road improvements have decreased travel time for pedestrians as well. The only negative feature for pedestrians is that the increased vehicle speeds have increased the danger to pedestrians. In addition to increased foot traffic, there has been a marked increase in moderate to long distance travel by bicycle or motorized transport. as shown in Table A of Annex D-11.

Vehicle traffic counts conducted during baseline studies and again during impact studies point to a significant increase in the average daily traffic (ADT) on ATAP rehabilitated roads. The lowest increase in ADT was found in Njombe with a 70% increase in daily traffic, ranging from a low of 43 vehicles per day (VPD) in 1993 to a current rate of 73 vehicles in 1995. In Kilimanjaro, along the Kwa Sadala-

Mbweera Road, traffic increased from 59 VPD to 334 VPD, an increase of 466%. Vehicles represented by these increases are passenger buses, trucks larger than five tons, and 4-wheel drive passenger vehicles which are often used for commercial passenger transport. In addition, bicycle traffic increases of over 100% have been measured in many areas.

Passenger traffic increased significantly as well, with increases ranging between 64% and 1869%. Passengers on the Njombe-Makete road averaged 356 per day in 1993 - rising to 582 per day on average in 1995. Shinyanga figures are smaller -- rising from 5 to 28; however, even this represents a 560% increase. Again, Kilimanjaro's Kwa Sadala road shows the most remarkable increase. In 1990, only 66 passengers/day were counted on average. By 1992, this had increased by 1870% to 1300 passengers/day on average. These remarkable increases are no doubt fueled in part by the decrease of 30% and more in passenger fares.[23]

Some question whether a direct link exists between the road improvements and the economic improvements. However, this is not a concern of the local people living near an ATAP road. They report overwhelmingly that road improvements have had a significant positive influence on the availability of transport for people and goods. In Njombe, for example, 75% of respondents felt that the road improvements have stimulated sales of crops, and reduced the cost of travel. In Kilimanjaro, 70% of the respondents felt that the road had yielded positive impacts on the ease of travel and the transport of goods into and out of the region.

In all areas studied, the overall cost of transport has been shown to have decreased significantly. The costs to transporters, for example, show that not only have they decreased their travel time by approximately 50%, but they have decreased fuel costs of between 30-50% often resulting in decreased costs to users. In one area, the cost for a 50 KG bag of food stuffs, e.g. sugar, rice, and flour, have decreased by between 6% and 62% (in constant baseline TSh).

### 5.3 Small Businesses and Commerce

Performance indicators for USAID/Tanzania's Strategic Objective 1 (noted above) include "indicators that measure increases in commercial activity along rehabilitated roads, including the number and variety of enterprises, percentage increases in daily turnover and expansions of inventory ". Data collected about the commercial activity along the ATAP funded roads clearly shows that there have been significant improvements. For example, the total number of commercial enterprises, i.e. shops, clubs, mechanics, etc., has, along the Kwa Sadala- Mbweera road, increased in number from 123 to 249 businesses.

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It should be noted that “decrease in passenger fares on USAID roads” was indicator 1.1c for the USAID/Tanzania’s Strategic Objective No. 1: More effective infrastructure services delivered. Though this has been dropped as an indicator in the current API, in favor of percentage increases in ADT, it is still an important measure. A reduction in vehicle operating costs is also an indicator (1.1d) for meeting of this Strategic Objective. Vehicle operating cost data, although limited, indicates that reductions of 66% have been achieved in some areas where ATAP road improvements have been completed. For further information see Table B in Annex D-11.

Unfortunately, though positive changes are agreed to have occurred, the numbers for other areas don't always clearly demonstrate this fact. For example, along the Njombe-Makete Road the total number of commercial enterprises has decreased by 28%. However, if this figure is examined in detail, one can see that significant positive changes have taken place in the commercial sector. The number of local businesses, all businesses, includes the numbers of local alcohol clubs at which both locally brewed beer, pombe, made from surplus maize and a locally tapped bamboo sap alcohol, ulanzi are sold. Prior to the rehabilitation of the road there were limited marketing opportunities for maize and ulanzi. Since the rehabilitation of the road, respondents have noted that not only are they able to sell as much maize as they want, but are also able to sell large bulk quantities of ulanzi to buyers coming from the towns. This change is reflected in the fact that there are 53% fewer local clubs than during the baseline studies. Part of this decrease is related to the decrease in the number of permanent retail shops - a drop of 11%. However, this figure can also be deceiving and mean different things to different people. For example, the retailers surveyed complained, while consumers rejoiced that the improved road had attracted vendors from other regions to the local markets. This meant that the variety of goods available had increased and prices had decreased. As a consequence, some noncompetitive local retail shops have been forced to close. However, it should also be kept in mind that between 40% and 71% of all retail businesses currently in operation opened only after road rehabilitation works had begun.

The majority of households (80-90%) surveyed report an increased availability of consumer goods in shops and via the monthly or weekly itinerant markets. Wholesalers from the Kwa Sadala - Mbwera region report as much as a 300% increase in orders from retailers along the improved road since its completion, despite only a 15% increase in numbers of retail shops. However, most respondents also notes that their ability to purchase items has decreased, principally due to increased costs of agricultural inputs, even though levels of income appear to be rising faster than the prices for most consumer goods.

Daily sales in the retail shops which have remained open have increased significantly. Estimated daily sales were determined by direct observation by researchers keeping a running tab on observed purchases in surveyed shops. Estimated daily sales based on direct observation showed significant increases of 53% to 140% (in constant baseline TSh). These estimated sales appear to confirm that retailers consistently underestimate their sales - a phenomena which occurs routinely throughout the world..

Prices for goods appear to have come down in absolute terms in some cases, or in real terms only, for some others. For example sugar along the Kwa Sadala-Mbwera Road has come down in price in absolute terms by 10% and by 48% in real terms. Other basics, such as oil, soap, salt, and batteries have shown decreases in real terms only, however, these decreases are between 14% and 25%. These savings are complemented with increased incomes and some decreases in expenditures for the studied areas. These improvements appear to be directly attributable to reduced costs of transport.

In terms of attributing positive changes to the USAID road, data from Shinyanga points to an interesting fact. Shinyanga is a place where men control the use of household income almost exclusively. Opinion surveys done in the area report that only 25% of women (who do not control income) saw the road as a benefit to household income whereas 75% of men feel the road to have benefited their income situation. There is not sufficient data from other regions to see if similar situations exist elsewhere.

## 5.4 Impact on Agriculture

Prior to ATAP and IRP, the poor state of rural roads in Tanzania contributed significantly to excessive losses of food and commodity crops. Other studies point out that “in Tanzania, 50 percent of the cotton in three regions, 80 percent of the rice in another region, and 50 percent of all seeds, fertilizer and other chemicals in another area were lost due to impassable rural roads in 1988".

There is agreement on all sides that sales of agricultural produce have increased. Most attribute this to the improvements made to the roadwork. District leaders of both Njombe and Makete cite the fact that prior to the road rehabilitation there were always individuals trying unsuccessfully to sell their produce along the Njombe-Makete Road. Most noted that the one positive aspect of having to previously drive the old road on District business was the ability to buy cheaply from farmers bulk quantities of food crops. Now they note that you seldom see road side vending and that most of the crops are sold at higher prices to middlemen who come in with trucks from various regional market towns, e.g. Mbeya, Iringa, and Makambako. This change took place suddenly along each section as the new road was completed. This is noted to have had significant benefits not only for both large and small farmers who are now able to gain needed income from crop sales, but also to the nation as a whole, since the farmers are now able to better distribute food from its high production zones.

Impacts noted for the various areas examined in this study can be summarized as increased and diversified production of both food and commodity cash-crops and increased crop production and sales. Table 5.1 depicts some of these changes.

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**TABLE 5.1**
**Crop Specific Agricultural Production Indicators**

| LOCATION | CROP | INDICATOR | CHANGE |
|---|---|---|---|
| Njombe | cabbage | acreage under cultivation '93-95 | **+57%** |
| | wheat | sales to outside traders | **up** |
| | potatoes | sales to outside traders | **up** |
| | maize | sales to outside traders | **up** |
| | ulanzi/pombe | number of local clubs | **-53%** |
| | pyrethrum | acreage to be planted '95-96 | **up** |
| Shinyanga | cotton | sales 1989-1991 (tons) | **+78%** |
| Kwa Sadala | coffee | production 1991-1992 (kg) | **+149%** |
| | bananas | production 1990-1992 (tons) | **+21%** |
| | green beans | new cash crop 1991: production increase 1991-92 (tons) | **+209%** |
| | tomatoes | production 1990-92 (tons) | **+100%** |
| | vegetables | production 1990-1992 (tons) | **+154%** |

*Production and sales of green beans have significantly offset problems of declining coffee prices and in 1992 green beans were estimated to have brought in 47% more money than coffee.

Where roads have been improved, the availability of agricultural inputs is up. In Njombe, slightly increased sales of fertilizers are reported. The fact that they are increased at all is significant given the 100% and more rise in the price of fertilizer and other important inputs, e.g. a 39% rise in vegetable seed prices, in the past year due to the elimination of subsidies. In all areas studied, agricultural inputs are more easily obtained and 30% of Shinyanga households attribute this benefit to the roadwork. In Kilimanjaro, 82% of respondents see a major increase in the availability of agricultural inputs since the road was completed.

Farmers clearly see the benefits brought by the road. Land values in the affected areas have increased significantly. For example: prime agricultural land near the road leased for TSh 5000 per acre in the months prior to the start of the Njombe-Makete roadwork. Within one year, that rate had risen to TSh 20,000 per acre, an increase in absolute terms of 300% or an increase in constant 1994 Tanzanian shillings of 233%. In areas of Kilimanjaro where land shortages have been a problem, the road has encouraged wealthier farmers to go to greater distances in order to rent farm land. The reports do not mention if these increases in land values have led to any increases in landlessness for poorer farmers, but this is a possible negative likely outcome of otherwise positive change.

## 5.5 Local Health Care and Family Planning

An independent study in 1991 found that an investment to improve low-volume roadway networks was more effective than investment to build more health care facilities. This observation is borne

out by the data obtained for ATAP road improvements. Rehabilitation of these roads has coincided with increased attendance at health facilities in some areas and with increased levels of good health reported by those surveyed. This is supported by the 1991 study that found that the quality of health care in a rural area can be considerably improved by increasing travel speeds on critical roads. Further, an earlier study concluded that in most areas the most frequent use of the road by women is for attending to health care.[24] This conclusion is also supported by data from the ATAP roads examined through this study. Although positive trends are noted, these trends are not always uniform from one site to the next. Tables 5.2 and 5.3 summarize these improvements.

People now by-pass ill-equipped local government hospitals and clinics in favor of better equipped private and church facilities. Some of this increase must be attributed to the government's imposition of cost-sharing and collection of fees for certain services. Thus the decision to patronize a fee for service facility, such as a Mission hospital, comes from the fact that if people have to pay they will go to the institution where they already know they will receive better service. Improved transport, of course, makes this easier to accomplish.

**TABLE 5.2**
**Health Care Indicators**
**Perceived changes from baseline year to impact study year**

| HEALTH CARE INDICATORS (staff survey) | Njombe | Shinynga | Kwa Sad |
|---|---|---|---|
| Has daily attendance at health facility increased? | YES-private NO-govt | NO | YES |
| Has health facility staff increased? | YES | NO | YES |
| Staff see significant impact of road? | YES | NO | YES |

The negative responses for Shinyanga appear to be a reflection of the fact that there are only two dispensaries in the target area and both are run by the government (though baseline data note a small church dispensary). No mention was made of residents traveling to any larger private/church facilities. It is clear that road improvements positively impact health care if facilities and supplies are available in the area.

Health care is defined here as including seeking treatment for themselves or for children and immediate family members as well as attending to the sick in hospitals, where relatives or friends are required to provide for all of patients needs such as cooking, feeding, bathing, etc.

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**TABLE 5.3**
**Health Care: Household Opinion Surveys**

| HEALTH: Opinion Survey | NJOMBE Better | NJOMBE Same | SHNYGA Better | SHNYGA Same | KWA Better | KWA Same |
|---|---|---|---|---|---|---|
| Is Family Health.... | -- | yes | 38% | 53% | 67.5% | 20% |
| Access to Health Care | yes | -- | 34% | 29% | 52.5% | 25% |

USAID/Tanzania's third Strategic Objective focuses on the increased use of family planning and HIV/AIDS preventative measures. Two of the Program Outcomes of this SO are (3.1) increased knowledge of and access to family planning information and services and (3.2d) increased percentages of the population with access to HIV/AIDS information and services. Data on the specific indicators for these SOs were not collected in the baseline or impact studies, however it is clear from the data that the improvements in the road and transport services have increased attendance at health centers. Improved transport has also increased the likelihood that individuals will seek out family planning options further from home. The Iringa Regional Medical Officer noted that when they have access to a second facility, further away from the questions of family and neighbors, women are much more likely to come in search of family planning advice and services. In areas where the only health facilities are run by the Catholic Church, women have the option of traveling to formerly prohibitively distant Lutheran or government clinics for advice and services.

In terms of access to condoms, it was noted by the AIDS sector advisor that the Salaama social marketing campaign of the Tanzania Aids Project (TAP) has benefitted from roads improvements, widening the distribution network for condom sales and educational ventures such the popular Salaama video road shows.

## TABLE 5.4
## Health Care Conditions: Changes since Baseline Studies

| BASELINE WHERE? | HEALTH CHANGES NOTED SINCE COMPLETION OF ROADWORKS |
|---|---|
| NJOMBE-MAKETE | 30% increase in private hospital/clinic attendance |
| | 30% increase in funding for private hospitals |
| | 70% decrease in government hospital attendance: ease of transport to 2 competing private hospitals cited. |
| | fewer perceive health as being bad than prior survey |
| | family planning clinics report greater numbers of women coming from greater distances for condoms/birth control |
| | seeking health care[25] cited as most frequent reason for use of road by 50% of men and 60.2% of women |
| | ability to easily transfer emergency and referral patients to better equipped facilities cited by health workers as a key improvement. |
| SHINYANGA | very few impacts noted-no increase in supply of drugs or in daily attendance (are government clinics only) |
| | 38% of Households believe their health has improved |
| | 15% of Households see the road as positive impact |
| KWA SADALA | ability to easily transfer emergency and referral patients to better equipped facilities cited by health workers as a key improvement. |
| | improved health education |
| | improved access to drugs through church hospitals and clinics |
| | improved access to Family planning (condoms, etc.) |
| | 68% of households cite better access to services, health education and drugs at church health centers as key to their improved health status |
| | improved delivery of hospital supplies |
| | private hospitals or clinics report an increase in attendance and staffing since the road was improved |
| | government hospitals and clinics report no increase in attendance but increased staffing since the road was improved |

[25] Seeking health care defined as treatment for self or immediate family member as well as assisting/visiting sick relations in hospitals or clinics.

Overall, access to health care for those living along ATAP roads appears to have significantly improved as shown in Table 5.4.

Donor groups and regional and district officials also note the increased access to health education. UNICEF and other donor groups report a significant increase in attendance by women at maternal health and child survival seminars and classes. Indeed, in areas of health, water, sanitation, education, agriculture, etc., the efforts of donor groups are being enhanced by the improvements made to rural roads as noted in Annex D-11 for Table Q. There are clear indications that by providing improved access to the people for donor groups, significant levels of additional development assistance have been greatly facilitated. The literature[26] clearly notes this aspect of rural roads impact and findings of the various impact assessment teams confirm it.

## 5.6 Other Social Impacts

The success of the ATAP roadwork in improving the social welfare of affected populations has been seen in other areas as well. While the benefits to education are not clearly defined in increased attendance at primary or secondary schools informants in Shinyanga and the Njombe-Makete areas report that the improved roadwork has improved the learning environment in several different ways. For example, increased incomes often are invested in education. The effect of this on students is not so much that there are increased numbers of children enrolled but that there are fewer days of school lost by all students when requested to return home and return with school fees. If a significant number of students are behind in paying fees, all students are sent away regardless of whether they have paid. In Tanzania, this is a pattern which can mean 1-2 days of classes lost per week.[27] Further, in order to get and retain teachers of good quality and allow them the time to teach, good roads are required. Teachers spend a good deal of both their free time and time allocated for teaching, on the road in attempts to retrieve pay packets from central District offices. Less time on the road directly translates to more time in the classroom. These observations are supported by the literature on rural roads as well as that for trunk roads rehabilitation.[28]

Other important changes noted along with improved roads include increased participation in the political process and improvements in democracy and governance. Improved road conditions were cited in the case of the Njombe-Makete road as having brought village women into the District political process. Women noted that prior to the rehabilitation of the road they were unable to travel to the District headquarters for nonessential business. Their family and farm obligations required that they not take the time or money for the two-three days required for such a trip given unreliable transport on bad roads and the high cost of food and lodging. Now that the improved road conditions and transport allow for one day round trip travel, they can easily participate in the workings of District government. Prior to the rehabilitation of the road there were no women participating on the District Council. Now a full 23% (8

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See Anderson and Vandervoort 1982

Lucas unpublished notes.

Devres 1980; ODA 1994; IBRD 1995.

out of 35) of the District Councilors are women. The ability of women, and to a lesser extent men, to make day trips for political, economic or social development purposes largely determines their participation. The participation of village elders both men and women in District politics has also been noted to have increased significantly.

# CHAPTER 6. COMMENTS AND CONCLUSIONS

## 6.1 Summary of Impacts

Since ATAP activities were initiated in 1988, they have had a significant, positive, and measurable impact on the Tanzanian rural road system and the rural population. The impacts are major, well documented, and visible. This study is not the first to report on ATAP's accomplishments. A September 1993 Policy Implementation Review of ATAP conducted by Associates in Rural Development reported that: "Roads are being reconstructed and maintained; private contractors are playing crucial roles in the process; and the Roads Fund, which was established to help insure that adequate revenues would be available for road maintenance, is deriving revenues which are, in fact, spent within the roads sector."[29] In August, 1993, a REDSO/ESA mid-term evaluation of ATAP concluded that "ATAP has clearly had an impact on moving the ministry towards becoming a management entity" and "the continued impact of this on overall public sector sustainability (a smaller staff to do the contracting) and on potential for decentralization (with increased local accountability) could be tremendous."[30] The findings of this MSI study confirm that the positive impacts identified in 1993 are continuing into 1995/96. The bottom line is clearly that: "The ATAP impact on the rehabilitation of rural roads in Tanzania has been and continues to be exceptional".

### 6.1.1 Institutional

Since its inception seven years ago, ATAP has played a major role in assisting the GOT with implementing far reaching institutional reforms directed at improving rural road access into areas of key agricultural production. Through these ATAP led reforms the GOT has:

- completely reorganized its ministries, departments, and field offices responsible for rural road management improving productivity and reducing costs,
- created an organization (the Rural Roads Division) to focus specifically on a sector which in 1987 the GOT had determined to be one of the key constraints impeding Tanzania's long term economic development,
- moved significantly from government provided "force account" rural road rehabilitation to contracting with the private sector for the rehabilitation and maintenance works,
- implemented a large number of management systems to objectively monitor and report status on process' and/or activities required to rehabilitate and/or maintain rural roads,

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Associates in Rural Development, Policy Implementation Review of ATAP, Sept. 1993.

USAID - A mid-Term Evaluation of USAID/Tanzania's Support to the Transport Sector, August 1993.

- developed new procedures for prioritizing the allocation of GOT funds that include social, economic, and environmental concerns in addition to technical considerations, and

- developed a requirement that sustainability must be considered before any project is initiated,

In interviews with other donors and GOT leaders two comments were often made. The first of these focused on USAID's role as one of a number of donors working in this field: i.e., "USAID through ATAP did not accomplish all of this alone - a number of donors supported many of the same reforms and the GOT had acknowledged in 1986-87 that major changes were required." The second focused on USAID's leadership role in this group: "however, it was USAID that took the lead, especially in pressing for decentralization and contracting with the private sector. Without the ATAP lead it is very likely that many of these improvements, especially the emphasis on privatization, would not have occurred."

The GOT Director of Roads and Aerodromes perhaps stated it the clearest. When asked what he considered to be the greatest contributions from ATAP his response was: " Two things really stand out, first was the decentralization of road operations to the regions with private contractors to do the work;" and, " second, was the introduction of program flexibility--before ATAP, and sometimes still today, donors provide a fixed project that was/is imposed on the Tanzanians; ATAP is flexible - it responds to the issue of the day , therefore our managers can now identify the problem, propose a solution, and with the flexibility of funding we can design and implement a solution".

On a cautionary basis the following points are worth noting: The GOT organization, MWCT, which ATAP helped create, has, generally speaking, functioned quite well. Rural roads are being rehabilitated and maintained in ever increasing numbers. It is not clear, however, that this organization will continue to exist. There is wide spread belief that a new Ministry of Transport will soon be created. Included in this Department would be a parastatal organization, called TANROADS which would function as a roads authority, outside of the normal government civil service system, to manage the road system. This could be good, or it could be bad. The MWCT employees with whom we spoke were unanimous in their support of this new organizational approach. One reason for their strong support is that there is wide spread belief that employees would get a substantial increase in salary and benefits. This of course could improve morale, thereby increasing productivity and efficiency. On the down side is the possibility that, organizationally at least, rural roads may be submerged so far down in the organization that the attention and support of top management and the political leaders would lead to an "out of sight - out of mind" situation. Perhaps more threatening is the proposal that the new TANROADS will include a "Force Account" unit staffed with 12 engineers and 12 technicians. This would seem to indicate that TANROADS contemplates a return to force account work. This would be a mistake. There is simply no way the GOT can purchase and maintain the equipment, hire the personnel, and manage the level of effort required to sustain the rural roads network. One need only to check the record from 1972-1988 to confirm this statement. This proposed reorganization bears close watching.

### 6.1.2 Roads Industry

ATAP has been the catalyst for the creation of two growth industries: rural road construction contractors, and consulting engineers. Although both of these groups were in Tanzania before ATAP, it is well documented that both of these industries/groups have grown dramatically since USAID first required that only local, qualified, contractors could bid on ATAP funded work.

Prior to ATAP, there were fewer than 30 local road contractors of which only 6 were deemed capable of performing major road rehabilitation.[31] The quantity of workable construction equipment was exceptionally limited, foreign exchange required to purchase spare parts was in critically short supply, and the private sector consulting engineers played no role in the design or construction supervision of these works.

Today - post ATAP - the situation is entirely different. On any given day, there are over 100 private firms working on ATAP funded activities, i.e. rehabilitation, redesign, construction supervision, bridge works, routine and periodic road maintenance, technical assistance, etc.. There are over 500 registered private firms capable of performing significant roles in the rehabilitation and/or maintenance of rural roads and the design work and construction supervision is being done by private sector consulting engineers.

## 6.2 Sustainability

In development work it is not enough to accomplish "something", that "something" must be sustained. This is especially true with institutional reforms and rural roads. Rural roads, specifically gravel and dirt surfaced rural roads, are perishable. A single rain storm or one extra heavy load can destroy in five minutes what it has taken years to accomplish. While ATAP has only been in place for seven years, there is considerable evidence to indicate that its work can be sustained. During each of these seven years the program has been jointly reviewed; accomplishments and problems have been noted; future conditionality has been negotiated; and agreements for use of additional funds have been reached. While this process does not guarantee sustainability, it does put in place a management framework for problem identification and a system of analyses that is vital to sustainability. This approach has worked well thus far and ATAP has provided important support to assist the GOT to:

- reorganize the MWCT's central office to oversee road policy and manage road funding,
- establish a new department (RRD) focusing specifically on rural roads,
- decentralize responsibilities and authorities for road operations to the regions,
- establish new processes for prioritizing the selection of roads for improvement to include socio-economic and environmental considerations,

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R. R. Singh, World Bank Report on National Construction Industry, April 1988.

- increase GOT funding by a specific amount (25%) to improve the recurrent and periodic maintenance,

- provide leadership in the creation of a road construction industry by moving out of force account construction and into contracting private firms to accomplish this work, and

- assist in development of a private consulting engineering industry --- the list goes on.

### 6.2.1 Institutional

Sustainability of institutional reforms is virtually dependent upon the political will of the national leaders. Sustaining the organizational and management changes that have been instituted over the lifetime of ATAP will likely depend on the level of support achieved with the new Ministry of Transport and the proposed new parastatal roads authority, TANROADS. If the new organization continues the regionalization process, especially the increasing of delegation of contracting authority to the regional tendering boards then it is probable that the progress made to date will be sustained. If, however, it attempts to return to the GOT's "force account" approach of the 1970-80s, then it is doubtful that the progress made to date will be sustained. Another concern is the level in the Ministry's organization where the roads department may be placed. If TANROAD leaders are too far down the chain of command then the emphasis placed on continuing the improvement of the rural roads sector is likely to suffer. This situation must be carefully watched.

### 6.2.2 Roads Industry

Sustainability of the roads industry depends primarily on continued financing, contracting efficiency, cost control, and transparency. If the road fund continues and grows in proportion to need, as it has during the past seven years, then the chances of success are high. Efficiency in the contracting effort however, needs to be improved. Delays of one year between selection of contractor and award of contract increases costs and dampens private sector interest. Contractors can lose their key personnel, or they can go broke waiting a year for an award. The transparency issue is important because of fairness. Contractors must be able to see that the game is being played fairly and openly. Cost control is also a factor. Costs must be fairly and objectively controlled. If costs are too high, the number of projects decreases and the number of contractors that can be sustained diminishes. If costs are too low contractors go broke and the project is delayed. Thus far, in ATAP funded projects, unit costs appear to be uneven and on the high side. The team recognizes that each facility and location is different, data is sparse, and not formatted to be easily and fairly compared. Even so, on the projects visited and reviewed the differentials between high unit costs and low unit costs could not be readily explained. There is some recognition of this problem and the MAG unit of the MWCT just completed the establishment of a unit cost data base, although this effort is also of concern to this team.[32]

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[32] This study brings with it the concern that it may institutionalize high costs because it includes so many high cost early awards in determining an average - the learning curve should be driving costs down.

Two projects reviewed, i.e. Kilimanjaro Road Package I and Kinyerezi Bridge, are of special concern and highlight the point that, in road contracting, cost and quality do not always go hand in hand. Both of these high cost projects have run into major problems. The Kilimanjaro road contract is now in default, with costs estimated to increase over 50% from a very high initial cost base. The Kinyerezi Bridge has virtually failed - aided no doubt from exceptionally heavy rainfall, but probably not designed or constructed too well either. This ten meter bridge was awarded at a cost of approximately $68,000. In addition, many of the other road projects have had cost overruns in excess of 50% and delays of over one year. When the cost overruns were discussed, the answer most often provided was that a new system was being developed to provide uniform costs for estimating. The teams concern is that there may be a belief that a computer system will solve the problem. This thinking is not likely to work. An experienced cost engineer should examine these projects and objectively, and in detail, review the costs with a value engineering approach, i.e. the elimination of unnecessary costs before these high costs become the average.

In addition to the foregoing, the following points should be noted on a cautionary basis. A number of people with whom we spoke expressed sentiment that the demise of the force account brigades had gone too far. These people expressed the thought that reengineered force account crews supported with equipment from a revamped PEHCOL (a government parastatal that leases construction equipment) could construct and/or maintain rural roads much better and cheaper than contracting with the private sector. Road building history, especially African road building history and more specifically Tanzanian road building history is replete with failures in government brigade "force account" performance.

### 6.2.3 Financial

ATAP has led to the adoption of important policy and institutional reforms aimed at improving financial resource mobilization and increased rural road maintenance and rehabilitation. As a direct result of ATAP, significantly increased funds are available to pay for maintenance, and the MWCT is spending Road Fund allocations in a more economically rational manner than before. However, the sustainability of these reforms in the future will depend, in large part, on the status of factors at the macro level, i.e.: (a) continued political will and commitment; (b) national economic growth; and (c) a favorable policy and regulatory environment for the road transport sector. At the more micro-level, the ability of the Road Fund to cover 100% of road maintenance requirements will depend on Government expanding the revenue base for Road Fund and on the other underlying assumptions made in the forecast being met or exceeded. Important issues in this regard include:

- The Government of Tanzania has consistently met Conditions Precedent of the ATAP program since 1988. However, with a new national government recently elected, the past track record is less of an indicator of future performance than it might otherwise have been. This notwithstanding, the new government has made no announcements or decisions to date that would put into question the commitment to ATAP reforms.

- The financial base for the Road Fund, and government's continued ability to allocate Road Fund collections to MWCT, will in part depend on the national economy's growth rate. This is not only required to maintain or expand the relevant tax base, such as the national consumption of

petroleum products or increased agricultural production with the resulting need for transport services, but also so that "competition" for collected taxes does not intensify and threaten allocations to the MWCT.

- The transport sector must remain dynamic. Government needs to support a policy and regulatory framework that fosters development of the road transport sector, because the sector provides the base for existing, proposed and candidate sources of tax/fee revenue for the Road Fund. With no explicit or formally adopted Transport Policy in place currently, the future agenda is less than optimally clear, and at a minimum, represents a "cost" to private sector operators due to the uncertainty it creates.

A micro-level analysis of the Road Fund's ability to meet projected needs indicates that the Fund, as currently proposed and constructed it is likely to provide 96% to 97% of estimated road maintenance budget requirements to the year 2000. However, these calculations made a number of assumptions which must remain valid if sustainability is to be achieved. These assumptions included the following.

C Collections through the Road Toll Tax will increase by 4% per annum to the year 2000. This is a low growth rate compared to recent history. However, the rate of increase has been declining, and there are some signs to indicate that the capacity of petrol and diesel consumers to absorb continued, sharp increases in the Toll Tax Rate may be limited.

C The vehicle fleet will expand by 2% per annum to the year 2000, most particularly for the "heavier" end of the vehicle size categories. Recent registrations of new vehicles have declined, as have the number of licensed transport operators, suggesting that growth in the sector may be slowing even though still recording positive rates. Government must foster the sector's development, or at a minimum, be sure not to adopt any policies or regulations that may dampen growth.

C The two proposed new sources for the Road Fund, commercial vehicle licenses and transit fees need to actually be added to the Fund to reach the 96% level.

C The MWCT must consistently, and actually, receive its 80% allocation from the Road Fund. This has not been the case in each of the previous years.

Sustainability will also be affected by whether the remaining 3%-4% funding gap can be closed. It is a fairly small gap. Thus, the prospects for closing it appear reasonably attainable, through either adding new tax revenue sources to the Fund, and/or changing marginally the existing or proposed funding means.

C The funds "coverage" model assumes that commercial vehicle license fees added to the Road Fund will exclude fees from passenger cars and motorcycles. However, these could also be added to the fund, and in fact would simplify matters from a tax administration point of view.

- The MWCT could be allocated more than 80% of the Road Fund money. Either the MWCT allocation share could be raised for the entire fund (indicating a shift in policy away from district roads, relatively), or more than 80% of just the newly added revenue sources could be allocated to the MWCT account.

- Other, new and appropriate sources of revenue for the Road could be added from the vast array of other taxes and fees levied on the road transport sector. However, many of these would diminish in terms of the degree to which to tax level is correlated with the level of road damage caused by the user.

However, to the detriment of financial sustainability, the official estimates of road maintenance budget requirements were last conducted in mid- to late-1993 for the IRP-II project appraisal report. Recent calculations by the MAG in MWCT, using other benchmarks, indicate that the appraisal report numbers are significant underestimates of actual budgetary needs. However, given the "triage" project selection method adopted by MWCT, with the encouragement of ATAP, MWCT's estimates of budget requirements will always be a "moving target" and be endogenously a function of the level of funds available to it.

It is also worth noting that a November, 1995 GOT audit of ATAP reported that internal accounting controls were weak. Not all of the expenditures were supported with proper documentation and there were cases that involved commingling of funds. This audit did not reveal any cases of fraud or gross mismanagement. Additional training in proper accounting with participation of all regions would be a good investment.

### 6.2.4 Sustainability of Local Level Impacts

A number of the positive impacts created by ATAP at the local level have been well documented. Now that these improvements have been initiated steps must be immediately taken to assure that these improvements are sustained. It is obvious that continued access to reliable transport in large part depends on the roads or bridges remaining in good condition once they are rehabilitated. There is general agreement in the donor community that the key to keeping rural roads maintained is the use of a local, labor-based approach. Involving communities affected by the road in the continued routine maintenance of roadwork is agreed to be effective in sustaining roadwork.[33] The fact that a labor-based approach is implemented by a large number of donors[34] is a sign that the importance of following up rehabilitation with cost effective maintenance has been recognized. Indications are that the GOT plans to continue and possibly even increase the use of labor based contracting.

Involving local communities in labor-based routine maintenance has the added benefit of bringing improved income levels to the villages serviced by the rural roads. One recent donor study reported that:

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1995 Irish Aid

NORAD, ILO, NCC.RUDEP, SDC, Irish Aid, DANIDA, EEC, FINIDA, UNDP, USAID, etc.

"The employment effect of utilizing labor intensive methods is very positive. A conservative estimate of 3,000 labor days per km at an average daily rate of TSh 400 equals to TSh 1.20 million per kilometer in the local economy.[35] Both men and women benefit from the unskilled labor requirements for maintaining rural roads. In Tanga, 25% of the labor-based workforce were women who held jobs for six months or more. In parts of Mbeya, 75% of the labor-based workforce were women and during the team's field visit to the Njombe-Makete roadwork,[36] large numbers of women were observed employed in the collection of rocks for use as building materials in the bridge works.

### 6.2.5 Use of Remaining Funds:

The question of what to do with remaining funds was posed to the team at the end of its period of field work. Since this was not a part of the original scope of work the team had not spend a lot of time researching suggestions for future expenditures. There is a consensus, however, that additional funding could pay large dividends in the following areas:

- Cost control - the approach used to date has primarily been a "European approach" focussed on averaging historical data and developing cost estimates of a model company. This approach tends to keep costs high and does not encourage the type of innovation required to compete in an "open market competition". The Mission should consider introducing the OMB Circular A-131 mandated "Value Engineering" precepts to the MWCT and private sector participants. Training in Value Engineering and Cost Accounting would pay major dividends.

- Labor- Based Methods - there is general agreement that the efficient use of labor based methods is key to the sustainability of the work accomplished to date. While the team noted outstanding examples of labor-based accomplishments the team did not do any in-depth analysis as to how efficient and cost effective the training provided to date has been. A financial and technical review of the USAID funded work in this activity should be accomplished.

- Contract Award Process - although there are examples of significant improvement in this area the costs of poor performance and the advantage of enhanced performance are simply too great to accept the status quo. Consideration should be given to funding a contracting improvement study conducted by a small team (4 or 5 personnel) of key GOT personnel and experienced contracting personnel from a U.S. transportation agency with rural road responsibilities. U.S. based Agencies such as the National Association of Counties, a State Highway Department - secondary road organization, or the U.S. Forest Service have significant experience in rural road contracting - far more than most European countries who still operate on more of a parastatal basis. The objective would be to develop a streamlined, simplified contracting process. Such a review could easily lead to improvements that would reduce future costs by millions of dollars and enhance sustainability.

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Irish Aid 1995

Road is completed, however some additional bridge works have recently been funded.

Finally, any remaining funds should be focussed on enhancing maintenance on the existing system rather than adding any new routes to the existing system.

# ANNEXES

Annex A - List of Contacts

Annex B - Bibliography

Annex C - Field Visit

Annex D -1 Total ATAP Program-Financial Table

Annex D-2 ATAP Bridge Program

Annex D-3 Road Tax Collection-Petroleum Sales Comparison (3 Tables)

Annex D-4 Transport License Fees Summary (2 Tables)

Annex D-5 Timing of Funds Transfers

Annex D-6 Road Fund Account-Receipts

Annex D-7 Expenditures of Road Funds by Region
Expenditures of Road Funds by Region, Class, and Type ( 7 Tables)

Annex D-8 Road Toll Tax Returns Compared with Expenditures by Region

Annex D-9 Road Fund Revenue Requirements

Annex D-10 People Impact Tables

## ANNEX A

List of Contacts

### Government of Tanzania-Ministry of Works, Communication and Transportation (MWCT)

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Mr. Msafiri Mrimi, Project Engineer, Rural Roads Section
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Mr. Marmo, Chief Engineer, Planning and Programming
Mr. Mwakijungu, Chief Accountant
Mr. Bandisa, Senior Accountant
Dr. Charles Kaira, Transport Planning Consultant
Mr. Kimambo, National Coordinator, Road Maintenance Initiative
Mr. Misah, Senior Programming Engineer
Mr. Kisimbo, Senior Programming Engineer
Mr. H. Urio, Director Roads and Aerodromes
Mr. A.A. Awadhi, Senior Engineer, Planning, Programming, MWCT Headquarters
Mr. T.L.V. Moso, Regional Engineer, Dar es Salaam Region
Mr. G.R.S. Rutaserwa, Bridge Engineer, MWCT Headquarters
Mr. T.K. Rugemalila, Engineer, Dar Es Salaam Region
Mr. Edvard Irgins, Chief Works Inspector, MWCT Headquarters
Mr. N.S.D. Nkinga, Director Contract Control Unit

### Regional and District Personnel

District Administrative Officer, Njombe
Victor Seff, Rural Roads Engineer, Iringa
Mr. C.N. Keenja, Iringa Regional Development, Director
Mr. Victor Seff, Iringa Rural Roads Engineer
Mr. A.M.A. Mwanjingili, Njombe District Administrative Officer
Mr. Kiiza, Morogoro Regional Engineer

### Ministry of Finance & Planning

Mr. Ufwinki, Principal Finance Officer, Revenue Section
Mr. M.E.J. Owino, Assistant Commissioner of Budget

Mr. Seif, Statistician, Revenue Section

**Government - Other**

Mr. Max Chambers, Technical Advisor, National Construction Council (NCC)
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Mr. Eric Boateng, JCGP Liaison Officer, UNDP
Martin Roche, Advisor, Parastatal Sector Reform Commission
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Mr. Freddy Strumane, Chief of Rail Transportation, TRC
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Mr. Shokat Rhemtulla, Partner, R.H. Enterprises
Mr. Joseph Peter Chuwa, Chief Civil Engineer, Tanconsult
Mr. Adil Dhiyebi, Owner, Dhiyebi Ltd.
Mr. Salvador Russo, Director, Micco Ltd.
Mr. Madeleka M.R.C. Managing Director, Struco Ltd.
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Mr. Vernon Bouch, Director, Price Waterhouse, Tanzania
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Camilla Lema, Swiss Development Corporation
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## ANNEX B

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## ANNEX C

## Field Visits

Field visits were made to six (6) sites in the region. The summary statements made are the result of a cursory analysis since no attempt was made to conduct any technical review. As noted, five of the projects appear to be of excellent value. The technical comments are from an engineer with considerable African rural road experience.

1. Idodi Road (Iringa Region) Periodic Maintenance. This 77 km of periodic maintenance work consisted of regravelling and bridge improvement works. Total cost was $890,000 or $11,600/km. The quality of work was excellent (including bridge improvement works) and except for a 3 km section immediately adjacent to Iringa this work is holding up very well. The driver was able to safely maintain a speed of 80/90 km/hr. The 3 km that is showing signs of deterioration is a heavily traveled section used by heavy trucks and for the most part is on a steep grade. Overall a good investment.

2. Mufundi Road (Iringa Region). This 30 km of road rehabilitation is significantly improving access into a major agricultural area and an area of highly scenic topography. The road contractor is doing excellent work and has recently purchased new equipment (including a Caterpillar motor grader). The people level impact study on this project was very positive. This 30 km improvement is part of the C1 Iringa Package totaling 66.4 km. Average cost for rehabilitation work was $22.400/km. An excellent investment.

3. Njombe - Makee Road (Iringa) Region). This 112.4 km of rehabilitation significantly improves access into a major agricultural region. The road and bridge works was of high quality. There are some problems with cross drainage and the engineers are trying a wide variety of water breaks. In addition to the road works, the Iringa Regional Tender Board recently awarded a contract for four (4) drainage structures. A recently completed people-impact study reports that this road improvement is having a highly positive impact on the lives of the local people. Average cots for road improvements was $15,800/km. Overall this is a very good project although the cross drainage and construction widths in areas of steep slopes could have been better.

4. Mgeta Bridge - Drift (Morogoro Region). This improvement permits all weather access into an area that has recently suffered major flood damage. The quality of construction is excellent.

5. Chazi II Bridge (Morogoro Region) - This works consisted of replacing two sections of deck (total 20 meters) at a cost of $42,000. This bridge permits all-weather access on a route that has just been renovated by a World Bank Project. The quality of construction is excellent.

6. Kinyerezi Bridge (Dar es Salaam Region). This project consisted of constructing a new 10 meter bridge, realigning a water line and constructing some diversion works. Total project cost was $83,000, of which $60,000 was for the bridge. Total construction time was 14 months. Three months after the project was completed the area suffered a major flood. The construction time and the costs were excessive. The quality of work was marginal and the bridge has, for the most part, failed. In a meeting with

MWCT engineers and the contractor it was suggested that the bridge will probably be demolished and replaced with a larger one. Although the flood played a major role in the structures failure it is probable that the design and construction were less than adequate.

CORE RURAL ROADS REHABILITATION PROGRAMME

EXPENDITURE AND CASH FLOW FORECASTS FOR FUNDED ACTIVITIES — SUMMARY AS OF 30TH JUNE, 1995

| CONTRACT NAME | LENGTH | CONTRACT SUM | VALUE OF | FY 1989/90 | FY 1990/91 | | FY 1991/92 | | FY 1992/93 | | FY 1993/94 | | FY 1994/95 | | FY 1995/96 | | FY 1996/97 | | FY 1997/98 | | FY 1998/99 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (KM) | (TShs.) | WORKS | 2nd Half | 1st Half | 2nd Half | 1st Half | 2nd Half | 1st Half | 2nd Half | 1st Half | 2nd Half | 1st Half | 2nd Half | 1st Half | 2nd Half | 1st Half | 2nd Half | 1st Half | 2nd Half | 1st Half | 2nd Half |
| | | | (M TShs.) | | | | | | | | | | | | | | | | | | | |
| Rehabilitation Contract of Package No. 1 | 147.6 | 1,672,314,172 | 2,667,050,517 | | | | 379.5 | 354.9 | 307.7 | 103.0 | 107.6 | | | | 707.3 | 707.3 | | | | | | |
| Rehabilitation Contract of Package No. 2 | 72.7 | 487,453,500 | 487,453,500 | | | 49.1 | 78.0 | 18.4 | 40.1 | 84.4 | 119.0 | 19.1 | 30.7 | | | | | | | | | |
| Rehabilitation Contract of Package No. 3 | 53.1 | 244,816,500 | 216,947,307 | 36.7 | 71.0 | 20.8 | 40.9 | 23.4 | 10.6 | 7.5 | 6.1 | | | | | | | | | | | |
| Rehabilitation Contract of Package No. 4 | 74.6 | 445,166,840 | 524,583,933 | 33.1 | 23.3 | 23.0 | 23.1 | 47.2 | 60.0 | 42.7 | 67.0 | 139.3 | 21.3 | 60.0 | | | | | | | | |
| Rehabilitation Contract of Package No. 5 | 89.4 | 515,238,148 | 448,271,894 | 93.3 | 64.5 | 39.0 | 54.8 | 44.5 | 73.1 | 69.7 | 16.4 | | | | | | | | | | | |
| Rehabilitation Contract of Package No. 6 | 120.8 | 766,658,103 | 959,053,901 | | | | 86.9 | 127.7 | 133.9 | 126.8 | 200.6 | 252.8 | 31.0 | | | | | | | | | |
| Rehabilitation Contract of Package No. 7 | 94.6 | 566,365,896 | 686,297,025 | | | | 126.5 | 26.3 | 73.9 | 75.9 | 118.5 | 87.2 | 107.1 | 81.6 | | | | | | | | |
| Rehabilitation Contract of Bariadi - Sapiwi Road | 40.4 | 355,393,182 | 355,393,182 | | | | | | | | | | 200.0 | 200.0 | 55.0 | | | | | | | |
| Sub-Total CRRP PHASE 1a Rehabilitation Contracts | 693.2 | 5053406341.0 | 6345051259.0 | 163.1 | 158.8 | 131.9 | 789.7 | 642.4 | 699.3 | 510.0 | 635.2 | 498.4 | 390.1 | 341.6 | 762.3 | 707.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Supervision Contract of Package No. 1 | 147.6 | 80,000,000 | 80,000,000 | | | | | 6.9 | 6.1 | 6.2 | 7.6 | 7.6 | 10.9 | 4.0 | 20.0 | | | | | | | |
| Supervision Contract of Packages 2 & 3 | 125.8 | 78,915,693 | 98,052,266 | | 17.4 | 12.6 | 7.2 | 2.9 | 18.3 | 13.2 | | 21.6 | | 10.4 | | | | | | | | |
| Supervision Contract of Packages 4 & 5 | 164.0 | 99,294,767 | 113,808,557 | | 28.9 | 6.7 | 10.5 | 10.1 | | 18.7 | 13.5 | 15.7 | 8.2 | 2.0 | | | | | | | | |
| Supervision Contract of Packages 6 & 7 | 215.4 | 87,793,210 | 113,622,330 | | | | 3.7 | 11.4 | 9.9 | 10.6 | 22.6 | 17.3 | 5.4 | 11.5 | 17.9 | | | | | | | |
| Supervision Contract of Bariadi - Sapiwi Road | 40.4 | 50,666,000 | 50,666,000 | | | | | | | | | | 10.0 | | 20.67 | | | | | | | |
| Sub-Total CRRP Phase 1a Supervision Contracts | 693.2 | 396,669,670 | 456,149,153 | 0.0 | 46.3 | 19.3 | 21.4 | 31.3 | 34.3 | 48.7 | 43.7 | 62.2 | 34.5 | 27.9 | 58.6 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Design Contract for CRRP - Iringa | 277.0 | 14,672,463 | 14,672,463 | | 4.5 | | 3.2 | 6.9 | | | | | | | | | | | | | | |
| Design Contract for CRRP - Kagera | 285.9 | 17,368,500 | 17,368,500 | | 2.4 | 3.3 | 4.1 | 4.1 | 3.8 | | | | | | | | | | | | | |
| Design Contract for CRRP - Mbeya | 243.4 | 11,640,000 | 11,640,000 | | 1.6 | 2.2 | | | 7.9 | | | | | | | | | | | | | |
| Design Contract for CRRP - Ruvuma | 199.1 | 12,984,500 | 12,984,500 | | 4.3 | | 3.1 | 3.7 | 1.9 | | | | | | | | | | | | | |
| Sub-Total CRRP Phase 1b Design Contracts | 1,005.4 | 56,665,463 | 56,665,463 | 0.0 | 12.8 | 5.5 | 10.4 | 14.7 | 13.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rehabilitation Contract of Package No. C1 - Iringa | 66.4 | 565,985,076 | 565,895,076 | | | | | | | | | 157.7 | 157.6 | 176.9 | 49.3 | | | | | | | |
| Rehabilitation Contract of Package No. C2 - Iringa | 58.2 | 320,788,944 | 587,843,145 | | | | | | | | | 97.9 | 222.9 | 223.6 | | | | | | | | |
| Rehabilitation Contract of Package No. C3 - Iringa | 48.6 | 373,116,480 | 852,785,242 | | | | | | | | | 107.2 | 199.0 | 303.2 | 267.0 | | | | | | | |
| Rehabilitation Contract of Package No. D1 - Ruvuma | 65.9 | 632,092,158 | 632,092,158 | | | | | | | | | | | | 232.0 | 262.0 | 138.1 | | | | | |
| Rehabilitation Contract of Package No. D2 - Ruvuma | 61.3 | 516,774,660 | 516,774,660 | | | | | | | | | | | | 170.0 | 162.0 | 162.0 | 22.8 | | | | |
| Rehabilitation Contract of Package No. D3 - Ruvuma | 71.9 | 643,205,724 | 643,205,724 | | | | | | | | | | | | 170.0 | 162.0 | 162.0 | 149.2 | | | | |
| Rehabilitation Contract of Package No. C4...C6 - Iringa | 178.8 | 1,966,800,000 | 1,966,800,000 | | | | | | | | | | | | | 491.7 | 491.7 | 491.7 | 491.7 | | | |
| Rehabilitation Contract of Package No. Mb5 - Mbeya | 125.9 | 1,384,900,000 | 1,384,900,000 | | | | | | | | | | | | | 346.2 | 346.2 | 346.3 | 346.2 | | | |
| Rehabilitation Contract of Package No. Ka2...Ka5 - Kagera | 197.6 | 2,173,600,000 | 2,173,600,000 | | | | | | | | | | | | | 543.4 | 543.4 | 543.4 | 543.4 | | | |
| Sub-Total Phase 1b Rehabiliation Contracts | 874.6 | 8,577,263,042 | 9,323,896,005 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 362.8 | 579.5 | 703.7 | 888.3 | 1,967.3 | 1,843.4 | 1,553.4 | 1,381.3 | 0.0 | 0.0 | 0.0 |
| Supervision Contract of Packages C1, C2 & C3 - Iringa | 173.2 | 112,079,000 | 112,079,000 | | | | | | | | | 11.2 | 12.9 | 18.9 | 30.0 | 28.0 | | | | | | |
| Supervision Contract of Packages D1, D2 & D3 - Ruvuma | 199.1 | 88,152,900 | 88,152,900 | | | | | | | | | 8.8 | 6.9 | | 20.0 | 24.0 | 23.4 | | | | | |
| Supervision Contract of Packages C4 & C6 - Iringa | 124.0 | 99,321,130 | 99,321,130 | | | | | | | | | | | | 21.0 | 21.0 | 21.0 | 21.0 | | | | |
| Supervision Contract of Packages C5 & Mb5 - Iringa & Mbeya | 158.7 | 114,603,250 | 114,603,250 | | | | | | | | | | | | 24.2 | 24.2 | 24.3 | 24.3 | | | | |
| Supervision Contract of Packages Ka1 & Ka2 - Kagera | 143.6 | 103,956,550 | 103,956,550 | | | | | | | | | | | | 21.9 | 21.9 | 21.9 | 22.0 | | | | |
| Supervision Contract of Packages Ka3, Ka4 & Ka5 - Kagera | 142.3 | 156,398,275 | 156,398,275 | | | | | | | | | | | | 33.2 | 33.2 | 33.3 | 33.3 | | | | |
| Sub-Total Phase 1b Supervision Contracts | 940.9 | 674,511,105 | 674,511,105 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 20.0 | 19.8 | 18.9 | 150.3 | 152.3 | 123.9 | 100.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| Labour Based Contractor Training | 130.0 | 1,015,000,000 | 1,015,000,000 | | | | | | | 50.0 | 103.0 | 114.0 | 264.0 | 130.0 | 200.0 | 84.0 | | | | | | |
| ATAP Routine Maintenance | | 3,750,000,000 | 3,898,166,905 | | | | | | | 213.1 | 150.3 | 537.2 | 1,852.2 | 0.0 | 400.0 | 400.0 | 197.1 | | | | | |
| ATAP Periodic Maintenance | | 1,960,000,000 | 1,960,000,000 | | | | | | | | 242.4 | 211.7 | 75.6 | 0.0 | 500.0 | 500.0 | 430.3 | | | | | |
| ATAP Bridge Works | | 1,880,000,000 | 1,880,000,000 | | | | | | | 18.0 | 119.7 | 228.7 | 390.3 | 283.1 | 300.0 | 300.0 | 240.2 | | | | | |
| Sub-Total ATAP Bridge, RM & PM Works | 0.0 | 7,590,000,000 | 7,738,166,905 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 231.1 | 512.4 | 977.6 | 2318.1 | 283.1 | 1200.0 | 1200.0 | 867.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Half Yearly Totals | | | | 163.1 | 217.9 | 156.7 | 821.5 | 688.4 | 747.2 | 839.8 | 1,294.3 | 2,035.0 | 3,606.0 | 1,505.2 | 3,259.5 | 4,110.9 | 2,834.9 | 1,654.0 | 1,381.3 | 0.0 | 0.0 | 0.0 |
| CUMMULATIVE TOTAL FUNDED ACTIVITIES | 1,697.8 | 23,363,515,621.0 | 25,609,439,890.0 | 163.1 | 381.0 | 537.7 | 1,359.2 | 2,047.6 | 2,794.8 | 3,634.6 | 4,928.9 | 6,963.9 | 10,569.9 | 12,075.1 | 15,334.6 | 19,445.5 | 22,280.4 | 23,934.4 | 25,315.7 | | | |
| EXPENDITURE AND CASH FLOW FORECASTS FOR NON-FUNDED ACTIVITIES | | | | | | | | | | | | | | | | | | | | | | |
| Rehabilitation Contract of Package No. Mb1...Mb4 - Mbeya | 139.5 | 1,534,500,000 | 1,534,500,000 | | | | | | | | | | | | | 383.6 | 383.6 | 383.6 | 383.7 | | | |
| Rehabilitation Contract of Package No. Ka1...Ka4 - Kagera | 88.3 | 971,300,000 | 971,300,000 | | | | | | | | | | | | | 242.8 | 242.8 | 242.8 | 242.9 | | | |
| Sub-Total Phase 1b Rehabilitation Contracts | 227.8 | 2,505,800,000 | 2,505,800,000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 626.4 | 626.4 | 626.4 | 626.6 | 0.0 | 0.0 | 0.0 |
| Supervision Contract of Packages Mb1 & Mb2 - Mbeya | 81.6 | 154,044,800 | 154,044,800 | | | | | | | | | | | 23.2 | 32.7 | 32.7 | 32.7 | 32.7 | | | | |
| Supervision Contract of Packages Mb3 & Mb4 - Mbeya | 57.9 | 130,177,125 | 130,177,125 | | | | | | | | | | | 19.0 | 27.8 | 27.8 | 27.8 | 27.8 | | | | |
| Sub-Total 1b Supervision Contracts | 139.5 | 284,221,925 | 284,221,925 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 42.2 | 60.5 | 60.5 | 60.5 | 60.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Half Yearly Totals | | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 42.2 | 60.5 | 686.9 | 686.9 | 686.9 | 626.6 | 0.0 | 0.0 | 0.0 |
| CUMMULATIVE TOTAL NON FUNDED ACTIVITIES | 139.5 | 2,790,021,925.0 | 2,790,021,925.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 42.2 | 102.7 | 789.6 | 1,476.5 | 2,163.4 | 2,790.0 | | | |
| GRAND TOTAL CORE RURAL ROADS PROGRAMME | 1,837.3 | 26,153,537,546.0 | 28,399,461,815.0 | 163.1 | 381.0 | 537.7 | 1,359.2 | 2,047.6 | 2,794.8 | 3,634.6 | 4,928.9 | 6,963.9 | 10,569.9 | 12,117.3 | 15,437.3 | 20,235.1 | 23,756.9 | 26,097.8 | 28,105.7 | | | |

**ANNEX D-2**

**ATAP FUNDED BRIDGEWORKS**

(bridges, drifts/fords, bridge-decks, large culverts)

| REGION | No. COMPLETED | IN PROGRESS | IN TENDER |
|---|---|---|---|
| 1. ARUSHA | - | - | 1 |
| 2. COAST | - | 2 | - |
| 3. D'SALAAM | 3 | 1 | - |
| 4. DODOMA | - | 4 | - |
| 5. IRINGA | - | 8 | - |
| 6. KAGERA | 2 | 4 | 2 |
| 7. KIGOMA | - | 3 | 3 |
| 8. K'NJARO | 2 | - | - |
| 9. LINDI | - | 2 | 4 |
| 10. MARA | - | - | 8 |
| 11. MBEYA | 4 | 2 | * |
| 12. M'GORO | 6 | - | 2 |
| 13. MTWARA | 1 | 1 | - |
| 14. MWANZA | 2 | 3 | - |
| 15. RUKWA | 6 | - | 3 |
| 16. RUVUMA | 6 | 13 | 17 |
| 17. SHIN'GA | 2 | 1 | - |
| 18. SINGIDA | 1 | 2 | 2 |
| 19. TABORA | 2 | - | - |
| 20. TANGA | - | 1 | - |
| **TOTALS** | 37 | 47 | 42 |

*Funds approved but not yet released

## ANNEX D-3

### TABLE 1
### Road Toll Collections Compared to Petroleum Sales

| Date | Average Toll Rate | Collections (TSh/liter) | Imputed Petroleum Sales (TSh/liter) (Millions Mil.) |
|---|---|---|---|
| Jan-92 | 7 | 248.9 | 35.6 |
| Feb-92 | 7 | 273.9 | 39.1 |
| Mar-92 | 7 | 265.9 | 38.0 |
| Apr-92 | 7 | 238.7 | 34.1 |
| May-92 | 7 | 244.8 | 35.0 |
| Jun-92 | 7 | 289.7 | 41.4 |
| Ju1-92 | 10 | 367.4 | 36.7 |
| Aug-92 | 10 | 536.8 | 53.7 |
| Sep-92 | 10 | 498.5 | 49.9 |
| Oct-92 | 10 | 528.3 | 52.8 |
| Nov-92 | 10 | 168.0 | 16.8 |
| Dec-92 | 10 | 185.5 | 18.6 |
| Jan-93 | 20 | 615.0 | 30.8 |
| Feb-93 | 20 | 961.2 | 48.1 |
| Mar-93 | 20 | 905.4 | 45.3 |
| Apr-93 | 20 | 912.9 | 45.6 |
| May-93 | 20 | 849.7 | 42.5 |
| Jun-93 | 22.5 | 301.8 | 13.4 |
| Ju1-93 | 25 | 1,288.9 | 51.6 |
| Aug-93 | 25 | 1,142.8 | 45.7 |
| Sep-93 | 25 | 1,355.4 | 54.2 |
| Oct-93 | 29.35 | 1,332.0 | 45.4 |
| Nov-93 | 30 | 1,311.4 | 43.7 |
| Dec-93 | 30 | 1,379.6 | 46.0 |
| Jan-94 | 30 | 1,495.2 | 49.8 |
| Feb-94 | 30 | 1,301.4 | 43.4 |
| Mar-94 | 30 | 1,191.8 | 39.7 |
| Apr-94 | 30 | 1,216.4 | 40.5 |
| May-94 | 30 | 1,135.0 | 37.8 |
| Jun-94 | 32.17 | 1,263.2 | 39.3 |
| Ju1-94 | 35 | 99.6 | 2.8 |
| Aug-94 | 35 | 234.0 | 6.7 |
| Sep-94 | 35 | 4,000.6 | 114.3 |
| Oct-94 | 35 | 2,248.0 | 64.2 |
| Nov-94 | 35 | 1,735.3 | 49.6 |
| Dec-94 | 35.97 | 1,616.4 | 44.9 |

**Implied Volumes of Petroleum Product Sold**

| | Imputed | TPDC | Percent Collected |
|---|---|---|---|
| CY 92 | 451.58 | 526.24 | 86% |
| CY 93 | 512.18 | 517.5 | 99% |
| CY 94 | 533.18 | 512.4 | 104% |

**TABLE 2**

**Petroleum Product Sales, by Region**[37]

| | 1993 | | | 1994 | | | 1993 | | | 1994 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MSP | MSR | GO | MSP | MSR | GO | MSP | MSR | GO | MSP | MSR | GO |
| | (---------- MT ----------) | | | (---------- MT ----------) | | | (---------- Liters millions | | | (---------- Liters millions ------- | | |
| Arusha | 7,187 | 873 | 22,593 | 7,704 | 415 | 22,958 | 9.77 | 1.21 | 27.11 | 10.47 | 0.58 | 27.55 |
| Coast | 390 | 3 | 4,834 | 371 | - | 2,268 | 0.53 | 0.00 | 5.80 | 0.50 | - | 2.72 |
| DSM | 38,933 | 1,47 | 115,10 | 42,565 | 1,874 | 134,152 | 52.91 | 2.05 | 138.12 | 57.85 | 2.60 | 160.98 |
| Dodoma | 2,113 | 11 | 10,950 | 2,308 | 22 | 9,897 | 2.87 | 0.02 | 13.14 | 3.14 | 0.03 | 11.88 |
| Iringa | 2,901 | 125 | 24,562 | 3,551 | 107 | 24,355 | 3.94 | 0.17 | 29.47 | 4.83 | 0.15 | 29.23 |
| Kagera | 1,792 | 922 | 10,363 | 1,858 | 545 | 5,979 | 2.44 | 1.28 | 12.44 | 2.53 | 0.76 | 7.17 |
| Kigoma | 1,437 | 191 | 5,095 | 642 | 16 | 3,295 | 1.95 | 0.27 | 6.11 | 0.87 | 0.02 | 3.95 |
| Kilimanj | 7,882 | 1,04 | 21,012 | 8,993 | 755 | 22,637 | 10.71 | 1.45 | 25.21 | 12.22 | 1.05 | 27.16 |
| Lindi | 127 | 349 | 2,395 | 395 | 127 | 2,928 | 0.17 | 0.48 | 2.87 | 0.54 | 0.18 | 3.51 |
| Mara | 342 | 1,51 | 4,034 | 166 | 1,297 | 2,769 | 0.46 | 2.10 | 4.84 | 0.23 | 1.80 | 3.32 |
| Mbeya | 3,804 | 108 | 23,597 | 2,737 | 5 | 13,545 | 5.17 | 0.15 | 28.32 | 3.72 | 0.01 | 16.25 |
| Mtwara | 286 | 682 | 5,464 | 767 | 339 | 7,168 | 0.39 | 0.95 | 6.56 | 1.04 | 0.47 | 8.60 |
| Mwanza | 3,976 | 1,01 | 17,992 | 4,312 | 1,219 | 22,071 | 5.40 | 1.41 | 21.59 | 5.86 | 1.69 | 26.49 |
| Rukwa | 424 | 118 | 2,818 | 250 | - | 1,419 | 0.58 | 0.16 | 3.38 | 0.34 | - | 1.70 |
| Ruvuma | 580 | 725 | 4,625 | 436 | 333 | 3,346 | 0.79 | 1.01 | 5.55 | 0.59 | 0.46 | 4.02 |
| Singida | 531 | 12 | 4,060 | 214 | 8 | 1,518 | 0.72 | 0.02 | 4.87 | 0.29 | 0.01 | 1.82 |

MSP - Petrol (Premium)
MSR - Petrol (Regular)
GO - Gas oil, (Diesel)
MT - Metric Tons

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shinyan | 923 | 64 | 8,045 | 756 | 99 | 5,223 | 1.25 | 0.09 | 9.65 | 1.03 | 0.14 | 6.27 |
| Tabora | 906 | 252 | 4,858 | 1,544 | 205 | 8,276 | 1.23 | 0.35 | 5.83 | 2.10 | 0.28 | 9.93 |
| Tanga | 3,155 | 166 | 21,043 | 2,820 | 134 | 18,050 | 4.29 | 0.23 | 25.25 | 3.83 | 0.19 | 21.66 |
| Morogor | 2,164 | 286 | 14,689 | 1,662 | 139 | 10,626 | 2.94 | 0.40 | 17.63 | 2.26 | 0.19 | 12.75 |
| | 79,853 | 9,93 | 328,13 | 84,051 | 7,639 | 322,480 | 108.5 | 13.79 | 393.76 | 114.23 | 10.60 | 386.98 |
| Zanzibar | 1,104 | 2,96 | 5,836 | 4,452 | 1,060 | 8,342 | | | | | | |
| Pernba | 99 | 450 | 582 | 68 | - | 381 | | | | | | |
| | 81,056 | 13,3 | 334,55 | 88,571 | 8,699 | 331,203 | | | 516.07 | | | 511.80 |

Source: TPDC records, and consultants calculations.

## TABLE 3

| | Petroleum Sales | | Road Fund Expend. | | Expend. per Liter | | |
|---|---|---|---|---|---|---|---|
| | 1993 | 1994 | 1993/94 | 1994/95 | 1993 | 1994 | Average |
| | (Liters; | (Liters; mil) | (TSh mil) | (TSh mil) | (TSh) | (TSh) | (TSh) |
| Arusha | 38.09 | 38.60 | 345.5 | 330.7 | 9.1 | 8.6 | 8.8 |
| Coast | 6.33 | 3.23 | 309.6 | 388.4 | 48.9 | 120.4 | 84.6 |
| DSM | 193.08 | 221.43 | 3,817.4 | 6,595.8 | 19.8 | 29.8 | 24.8 |
| Dodoma | 16.03 | 15.04 | 190.4 | 482.5 | 11.9 | 32.1 | 22.0 |
| Iringa | 33.59 | 34.20 | 162.1 | 333.1 | 4.8 | 9.7 | 7.3 |
| Kagera | 16.15 | 10.46 | 245.0 | 307.3 | 15.2 | 29.4 | 22.3 |
| Kigoma | 8.33 | 4.85 | 213.5 | 286.9 | 25.6 | 59.2 | 42.4 |
| Kilimanjaro | 37.38 | 40.43 | 448.7 | 287.2 | 12.0 | 7.1 | 9.6 |
| Lindi | 3.53 | 4.23 | 413.1 | 370.0 | 117.0 | 87.5 | 102.3 |
| Mara | 7.40 | 5.35 | 182.2 | 588.0 | 24.6 | 109.9 | 67.3 |
| Mbeya | 33.64 | 19.98 | 287.6 | 524.8 | 8.6 | 26.3 | 17.4 |
| Mtwara | 7.89 | 10.11 | 273.9 | 398.2 | 34.7 | 39.4 | 37.0 |
| Mwanza | 28.41 | 34.04 | 193.7 | 376.8 | 6.8 | 11.1 | 8.9 |
| Rukwa | 4.12 | 2.04 | 192.8 | 411.9 | 46.8 | 201.7 | 124.2 |
| Ruvuma | 7.34 | 5.07 | 387.4 | 487.6 | 52.7 | 96.2 | 74.5 |
| Singida | 5.61 | 2.12 | 244.9 | 346.1 | 43.6 | 163.0 | 103.3 |
| Shinyanga | 11.00 | 7.43 | 219.7 | 309.8 | 20.0 | 41.7 | 30.8 |
| Tabora | 7.41 | 12.31 | 311.8 | 393.2 | 42.1 | 31.9 | 37.0 |
| Tanga | 29.77 | 25.68 | 284.7 | 459.1 | 9.6 | 17.9 | 13.7 |
| Morogoro | 20.96 | 15.20 | 347.9 | 611.7 | 16.6 | 40.2 | 28.4 |
| | 516.07 | 511.80 | | | | | |

Source: TPDC records; MWCT Annual Road Fund reports; and consultant's calculations.

**ANNEX D-4**

**TABLE 2**

**Transport License Fees for Commercial Vehicles**

| | Axba (No.) | GVW (Tone) | AnnualFee (July 1995) (TSh OOOs) | Previous Fee (a) (TSh OOOs) | Mlaimum Increase (Percent) |
|---|---|---|---|---|---|
| **A. Single Unit Vehicles** | | | | | |
| | 2 | 3/4 -- 5 | 10 | 6.22 | 61% |
| | 2 | 5 -- 11 | 35 | 9.34 | 275% |
| | 2 | 11 -- 17 | 100 | 14.00 | 614% |
| | 3 | over 17 | 125 | 21.00 | 495% |
| **B. Vehicle with Draw Bar Trailers (Two Units)** | | | | | |
| | 4 | up to 36 | 260 | 28.00 | 829% |
| | 5 | up to 44 | 285 | 51.32 | 455% |
| | 6 | up to 52 | 310 | 91.10 | 240% |
| **C. Tractors with Semi Trailers (Two Units)** | | | | | |
| | 2 | up to 10 | 20 | 9.34 | 114% |
| | 3 | up to 27 | 135 | 60.00 | 125% |
| | 4 | up to 35 | 260 | 71.36 | 264% |

| | | | | |
|---|---|---|---|---|
| 5 | up to 43 | 285 | 91.62 | 211% |
| 6 | up to 49 | 255 | 91.62 | 178% |

(a) Several of these license fees covered periods of greater than one year. Thus, the percent increase is actually even greater.

Source: Central Transport Licensing Authority.

## TABLE 2

### Commercial Vehicle License Fees

| Class | GVW/Tons | No. Of Axles | No. Of Vehicles | Average Fee Rate (TSh) | Total Revenue (TSh 000s) |
|---|---|---|---|---|---|
| **A.** | **Trucks, Tractors & Buses:** | | | | |
| | 1 Up to 5 | 2 | 11,300 | 10,000 | 113,000 |
| | 2 > 5 -- 17 | 2 | 7,000 | 35,000 | 245,000 |
| | 3 > 11 -- 17 | 2 | 12,760 | 100,000 | 1,276,000 |
| | 4 > 17 -- 25 | 3 | 3,800 | 125,000 | 475,000 |
| **B.** | **Drawbar & Semi-Trailers:** | | | | |
| | 5 Up to 10 | 2 | 240 | 10,000 | 2,400 |
| | 6 > 10 -- 20 | 2 | 1,000 | 160,000 | 160,000 |
| | 7 > 20 -- 28 | 3 | 1,200 | 185,000 | 222,000 |
| | 8 > 28 -- 33 | 4 | 800 | 155,000 | 124,000 |
| | | | 38,100 | | 2,617,400 |

Note: Fleet analysis per NTC, based on GOPA base numbers. Average fee rate per NTC analysis, and based on 1995 approved rates.

**ANNEX D-5**

**TABLE 1**

**Timing of Transfers of Roads Fund from MoF to MWCT**

| Road Toll Collection Month | Date of Transfer 1992/93 | 1993/94 | 1991/92 |
|---|---|---|---|
| July | 16-Oct | 28-Aug | 23-Sep |
| August | 16-Oct | 2-Oct | 8-Oct |
| September | 31-Dec | 11-Nov | 29-Oct |
| October | 31-Dec | 25-Nov | 26-Nov |
| November | 14-Feb | 28-Dec | 14-Jan |
| December | 14-Feb | 28-Jan | 7-Feb |
| January | 14-Apr | 25-Feb | 18-Mar |
| February | 14-Apr | 29-Mar | 29-Mar |
| March | 29-May | 28-Apr | 13-May |
| April | 2-Jun | 26-May | 7-Jun |
| May | 2-Aug | 2-Jul | 28-Jun |
| June | 2-Aug | 30-Jul | 28-Jul |
| Average Time Lag (a) | 58 | 29 | 34 |

(a) Calculated on basis of end-date in month for which payment is being collected, and assumes 30 days per month on average.

Source: Programming Section's records, MWCT.

## ANNEX D-6

## TABLE 1
## Road Fund Account: Receipts from MoF

| | 1993/94 | 1994/95 |
|---|---|---|
| | (TSh. millions) | |
| July | 518.8 | 916.7 |
| August | 626.7 | 916.7 |
| September | 778.0 | 916.7 |
| October | 860.9 | 916.7 |
| November | 783.2 | 916.7 |
| December | 892.2 | 916.7 |
| January | 863.6 | 916.7 |
| February | 848.7 | 916.7 |
| | | 2,093.8 |
| | | 349.0 |
| March | 833.6 | 916.7 |
| April | 752.5 | 916.7 |
| | | 349.0 |
| May | 823.3 | 916.7 |
| June | 740.0 | 916.7 |

| | | |
|---|---|---|
| | | 1,395.8 |
| | | 820.1 |
| **Sub-Total** | 9,321.4 | 16,007.7 |
| Balance from Prior Year | 562.1 | 811.5 |
| **Total** | 9,883.5 | 16,819.2 |

Source: Annual Road Fund Reports, Chief Accountant, MWCT.

**ANNEX D-7**

**TABLE 1**

**Summary of MWCT Road Fund Expenditures, by Region, Road Class and Type of Road Work**

| | -------1993/94------- | | | | | ------1994/95------- | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Region** | **Trunk** | **Rural** | **Periodic** | **Spot** | **Emergency** | **Trunk** | **Rural** | **Periodic** | **Spot** | **Emergency** |
| **Arusha** | **50.8%** | **48.2%** | **8.2%** | **47.7%** | **43.1%** | **44.2%** | **53.9%** | **28.5%** | **4.3%** | **65.2%** |
| **Coast** | 68.6% | 31.0% | 21.5% | 50.3% | 27.8% | 66.5% | 33.5% | 57.0% | 24.6% | 18.4% |
| DSM HQ | 38.9% | 45.6% | 36.9% | 39.2% | 8.4% | 64.0% | 25.1% | 57.9% | 13.6% | 17.6% |
| Dodoma | 48.0% | 52.0% | 1.5% | 43.5% | 55.0% | 73.0% | 26.7% | 0.0% | 58.2% | 41.6% |
| Iringa | 56.0% | 44.0% | 0.3% | 19.2% | 80.5% | 49.8% | 47.0% | 38.9% | 17.5% | 40.4% |
| Kagera | 44.9% | 54.8% | 6.3% | 30.6% | 62.7% | 50.9% | 47.9% | 1.1% | 21.3% | 76.4% |
| Kigoma | 34.3% | 65.2% | 0.0% | 61.0% | 38.5% | 29.4% | 67.6% | 0.0% | 25.4% | 71.7% |
| Kilimanjaro | 63.6% | 35.3% | 5.4% | 23.5% | 70.0% | 33.2% | 66.5% | 2.5% | 5.4% | 91.8% |
| Lindi | 65.8% | 34.2% | 39.0% | 25.0% | 36.0% | 57.4% | 42.3% | 12.0% | 22.4% | 65.3% |
| Mara | 49.2% | 50.7% | 2.5% | 19.9% | 77.6% | 51.6% | 47.5% | 1.8% | 28.7% | 68.6% |
| Mbeya | 62.2% | 37.7% | 25.1% | 16.0% | 58.8% | 48.5% | 51.5% | 19.8% | 14.2% | 66.1% |
| Morogoro | 43.7% | 55.5% | 12.6% | 11.2% | 75.4% | 42.6% | 56.2% | 5.4% | 52.6% | 40.8% |
| Mtwara | 61.3% | 38.2% | 30.7% | 22.0% | 46.8% | 67.7% | 31.8% | 43.2% | 4.8% | 51.5% |
| Mwanza | 37.3% | 62.4% | 17.9% | 17.7% | 64.1% | 53.8% | 45.4% | 15.8% | 12.1% | 71.4% |
| Rukwa | 47.4% | 51.8% | 1.3% | 24.0% | 73.8% | 58.8% | 41.2% | 32.2% | 41.8% | 26.0% |
| Ruvuma | 59.0% | 40.8% | 40.8% | 17.2% | 41.9% | 71.0% | 28.7% | 26.3% | 15.6% | 57.7% |
| Singinda | 57.4% | 42.4% | 2.0% | 55.4% | 42.4% | 53.6% | 45.2% | 0.0% | 35.1% | 63.7% |
| Shinyanga | 33.9% | 42.5% | 5.8% | 22.6% | 48.0% | 51.0% | 47.5% | 13.5% | 18.5% | 66.6% |
| Tabora | 61.8% | 38.0% | 26.0% | 20.2% | 53.7% | 61.8% | 38.2% | 37.0% | 34.1% | 28.8% |
| Tanga | 44.4% | 55.4% | 33.5% | 17.5% | 48.7% | 44.1% | 55.0% | 33.4% | 1.0% | 64.7% |
| Average | 51.4% | 46.3% | 15.9% | 29.2% | 52.7% | 53.6% | 44.9% | 21.3% | 22.6% | 54.7% |

Note**:** May not add to 100% as Road Board Cost (39120) and DSM Roads Improvement Project (39111) are excluded.
Source: Road Fund Accounts, Chief Accountants Department, MWCT

**TABLE 2**

**MWCT Road Fund Expenditures, by Region and Type of Road Work**

**(TSh Millions)**

**1993/94**

| Region | --------Trunk Road-------- | | | | --------Rural Roads-------- | | | | Other | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | Routine | Periodic | Spot | Emergency | Routine | Periodic | Spot | Emergency | | |
| Arusha | 65.6 | 17.6 | 15.5 | 86.0 | 91.3 | 12.1 | 33.1 | 39.1 | 3.7 | 363.9 |
| Coast | 44.8 | 58.8 | 12.8 | 98.4 | 42.3 | 8.4 | 30.8 | 15.6 | 1.2 | 313.0 |
| DSM HQ | 143.2 | 635.0 | 39.1 | 668.1 | 177.7 | 774.9 | 653.3 | 136.1 | 5590.0 | 3,817.4 |
| Dodoma | 46.4 | 2.7 | 23.3 | 12.3 | 50.6 | 0.0 | 16.0 | 25.3 | - | 176.4 |
| Iringa | 66.7 | 0.5 | 18.8 | 0.0 | 56.9 | - | 10.8 | - | - | 153.6 |
| Kagera | 58.2 | 14.7 | 30.8 | - | 86.7 | - | 34.8 | 5.1 | 0.9 | 231.1 |
| Kigoma | 48.2 | - | 16.0 | 8.3 | 33.2 | - | 13.6 | 91.1 | 1.1 | 211.4 |
| Kilimanjaro | 61.7 | 3.5 | 15.3 | 14.0 | 42.3 | 4.5 | - | 5.6 | 1.6 | 148.7 |
| Lindi | 60.3 | 114.5 | 17.7 | 79.4 | 88.4 | 46.5 | 6.3 | - | - | 413.1 |
| Mara | 62.5 | 4.5 | 13.2 | 9.5 | 79.0 | - | 12.6 | 0.9 | 0.1 | 182.3 |
| Mbeya | 80.8 | 54.2 | 29.6 | 14.3 | 88.3 | 18.0 | 2.2 | - | 0.3 | 287.6 |
| Morogoro | 102.8 | 16.1 | 20.8 | 12.5 | 159.6 | 27.9 | 5.6 | - | 2.7 | 347.9 |
| Mtwara | 51.1 | 88.2 | 11.2 | 25.4 | 83.4 | - | 26.4 | - | 1.4 | 287.1 |
| Mwanza | 46.7 | 20.8 | 2.2 | - | 73.1 | 12.6 | 6.0 | 24.8 | 0.7 | 186.9 |
| Rukwa | 60.7 | 2.5 | 21.0 | 7.2 | 81.7 | - | 11.1 | 7.0 | 1.6 | 192.8 |
| Ruvuma | 108.3 | 75.1 | 31.6 | 13.7 | 53.9 | 83.0 | 21.1 | - | 0.6 | 387.8 |
| Singida | 49.4 | 4.9 | 24.6 | 61.7 | 54.4 | - | 27.9 | 21.5 | 0.6 | 244.9 |
| Shinyanga | 46.8 | 12.8 | 5.0 | 9.9 | 58.7 | - | 12.9 | 21.8 | 51.7 | 219.8 |
| Tabora | 64.6 | 73.3 | 36.7 | - | 87.2 | - | 20.3 | - | 0.4 | 282.5 |
| Tanga | 76.9 | 25.6 | 20.3 | 11.1 | 70.3 | 75.6 | 5.6 | 15.8 | 0.8 | 301.9 |
| Total | 1,345.8 | 1,225.2 | 405.3 | 1,131.7 | 1,558.8 | 1,063.4 | 950.4 | 409.6 | 659.4 | 8,749.6 |
| Share (%) | 15.4% | 14.0% | 4.6% | 12.9% | 17.8% | 12.2% | 10.9% | 4.7% | 7.5% | 100.0% |

Source: Road Fund Accounts, Chief Accountants Department, MWCT.

**TABLE 3**

**MWCT Road Fund Expenditures, by Region and Type of Road Work**
**(Percent Distribution)**

**1993/94**

| | --------Trunk Roads-------- | | | | --------Rural Roads-------- | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Region** | **Routine** | **Periodic** | **Spot** | **Emergency** | **Routine** | **Periodic** | **Spot** | **Emergency** | **Other** | **Total** |
| Arusha | 18.0% | 4.8% | 4.2% | 23.6% | 25.1 % | 3.3% | 9.1 % | 10.7% | 1.0% | 100.0% |
| Coast | 14.3% | 18.8% | 4.1% | 31.4% | 13.5% | 2.7% | 9.8% | 5.0% | 0.4% | 100.0% |
| DSM HQ | 3.8% | 16.6% | 1.0% | 17.5% | 4.7% | 20.3% | 17.1% | 3.6% | 15.5% | 100.0% |
| Dodoma | 26.3% | 1.5% | 13.2% | 7.0% | 28.7% | 0.0% | 9.1 % | 14.3% | 0.0% | 100.0% |
| Iringa | 43.4% | 0.3% | 12.2% | 0.0% | 37.0% | 0.0% | 7.0% | 0.0% | 0.0% | 100.0% |
| Kagera | 25.2% | 6.3% | 13.3% | 0.0% | 37.5% | 0.0% | 15.1 % | 2.2% | 0.4% | 100.0% |
| Kigoma | 22.8% | 0.0% | 7.6% | 3.9% | 15.7% | 0.0% | 6.4% | 43.1% | 0.5% | 100.0% |
| Kilimanjaro | 41.5% | 2.4% | 10.3% | 9.4% | 28.5% | 3.1% | 0.0% | 3.8% | 1.1% | 100.0% |
| Lindi | 14.6% | 27.7% | 4.3% | 19.2% | 21.4% | 11.3% | 1.5% | 0.0% | 0.0% | 100.0% |
| Mara | 34.3% | 2.5% | 7.3% | 5.2% | 43.3% | 0.0% | 6.9% | 0.5% | 0.0% | 100.0% |
| Mbeya | 28.1% | 18.9% | 10.3% | 5.0% | 30.7% | 6.2% | 0.8% | 0.0% | 0.1% | 100.0% |
| Morogoro | 29.6% | 4.6% | 6.0% | 3.6% | 45.9% | 8.0% | 1.6% | 0.0% | 0.8% | 100.0% |
| Mtwara | 17.8% | 30.7% | 3.9% | 8.9% | 29.0% | 0.0% | 9.2% | 0.0% | 0.5% | 100.0% |
| Mwanza | 25.0% | 11.1% | 1.2% | 0.0% | 39.1% | 6.8% | 3.2% | 13.3% | 0.3% | 100.0% |
| Rukwa | 31.5% | 1.3% | 10.9% | 3.7% | 42.4% | 0.0% | 5.8% | 3.7% | 0.8% | 100.0% |
| Ruvuma | 27.9% | 19.4% | 8.2% | 3.5% | 13.9% | 21.4% | 5.5% | 0.0% | 0.2% | 100.0% |
| Singida | 20.2% | 2.0% | 10.0% | 25.2% | 22.2% | 0.0% | 11.4% | 8.8% | 0.2% | 100.0% |
| Shinyanga | 21.3% | 5.8% | 2.3% | 4.5% | 26.7% | 0.0% | 5.9% | 9.9% | 23.5% | 100.0% |
| Tabora | 22.9% | 26.0% | 13.0% | 0.0% | 30.9% | 0.0% | 7.2% | 0.0% | 0.2% | 100.0% |
| Tanga | 25.5% | 8.5% | 6.7% | 3.7% | 23.3% | 25.0% | 1.8% | 5.2% | 0.3% | 100.0% |

**TABLE 4**

**MWCT Road Fund Expenditures, by Region and Type of Road Work**

**(TSh Millions)**

**1994/95**

| | --------Trunk Roads-------- | | | | --------Rural Roads-------- | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Region** | **Routine** | **Periodic** | **Spot** | **Emergency** | **Routine** | **Periodic** | **Spot** | **Emergency** | **Other Other Other** | **Total** |
| Arusha | 92.2 | 48.0 | 5.4 | 0.4 | 123.6 | 46.1 | 8.5 | - | 6.5 | 330.7 |
| Coast | 68.4 | 102.3 | 57.1 | 30.4 | 3.1 | 119.0 | 8.0 | - | - | 388.3 |
| DSM HQ | 1,001.0 | 2,357.8 | 1.5 | 694.6 | 111.7 | 1,311.9 | 17.6 | 146.4 | 690.8 | 6,333.1 |
| Dodoma | 90.2 | - | 110.5 | 160.3 | 115.2 | - | 16.7 | - | 1.3 | 494.1 |
| Iringa | 136.4 | 4.1 | 25.6 | 3.2 | 0.9 | 128.3 | 30.6 | - | 10.8 | 339.9 |
| Kagera | 105.2 | 3.3 | 49.9 | - | 132.7 | - | 16.3 | - | 4.0 | 311.3 |
| Kigoma | 66.3 | - | 5.0 | 12.8 | 138.5 | - | 4.8 | 50.1 | 8.4 | 285.9 |
| Kilimanjaro | 89.0 | 5.3 | 1.1 | - | 174.6 | 1.9 | - | 14.4 | 1.0 | 287.2 |
| Lindi | 89.2 | 44.3 | 53.7 | 25.1 | 152.5 | 0.0 | 4.2 | - | 1.0 | 370.0 |
| Mara | 46.5 90.1 | 6.3 4.8 | 38.2 | 32.6 | 131.9 | 1.2 | 8.3 | 16.3 | 2.9 | 332.4 |
| Mbeya | 156.2 | 43.1 | 8.7 | 55.5 | 202.8 | 64.3 | 10.4 | 2.2 | - | 543.2 |
| Morogoro | 99.5 | 3.1 | 95.5 | 64.8 | 152.1 | 30.5 | 158.6 | 5.2 | 7.2 | 616.3 |
| Mtwara | 92.0 | 178.1 | 8.9 | 0.1 | 120.4 | - | 10.7 | 0.2 | 2.2 | 412.6 |
| Mwanza | 106.1 | 49.4 | 8.4 | 28.1 | 148.6 | 6.9 | 6.6 | - | 2.8 | 356.8 |
| Rukwa | 104.8 | - | 52.3 | 85.2 | 2.4 | 132.7 | 14.7 | 19.9 | - | 411.9 |
| Ruvuma | 171.2 | 103.2 | 35.6 | 36.0 | 110.1 | 25.3 | 4.6 | - | 1.6 | 487.6 |
| Singida | 84.2 | - | 97.7 | 3.5 | 136.2 | - | 20.3 | - | 4.2 | 346.1 |
| Shinyanga | 97.5 | 41.9 | 18.7 | - | 108.7 | - | 21.2 | 17.3 | 4.5 | 309.8 |
| Tabora | 110.8 | 10.9 | 78.3 | 43.1 | 2.6 | 134.7 | 5.4 | 7.3 | - | 393.1 |
| Tanga | 197.8 | 4.2 | 0.4 | - | 99.4 | 149.3 | 4.0 | - | 4.0 | 459.1 |
| Total | 3,054.0 | 3,003.7 | 752.5 | 1,275.6 | 2,167.8 | 2,152.1 | 371.3 | 279.3 | 753.1 | 13,809.4 |
| Share (%) | 22.1% | 14.0% | 5.4% | 9.2% | 15.7% | 15.6% | 2.7% | 2.0% | 5.5% | 100.0% |

Source: Road Fund Accounts, Chief Accountants Department, MWCT

**TABLE 5**

**MWCT Road Fund Expenditures, by Region and Type of Road Work**

**(Percent Distribution)**

**1994/95**

| | --------Trunk Roads-------- | | | | --------Rural Roads-------- | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Region** | **Routine** | **Periodic** | **Spot** | **Emergency** | **Routine** | **Periodic** | **Spot** | **Emergency** | **Other** | **Total** |
| Arusha | 27.9% | 14.5% | 1.6% | 0.1% | 37.4% | 13.9% | 2.6 % | 0.0% | 2.0% | 100.0% |
| Coast | 17.6% | 26.4% | 14.7% | 7.8% | 0.8% | 30.6% | 2.1% | 0.0% | 0.0% | 100.0% |
| DSM HQ | 15.8% | 37.2% | 0.0% | 11.0% | 1.8% | 20.7% | 0.3% | 2.3% | 10.9% | 100.0% |
| Dodoma | 18.2% | 0.0% | 22.3% | 32.4% | 23.3% | 0.0% | 3.4% | 0.0% | 0.3% | 100.0% |
| Iringa | 40.1% | 1.2% | 7.5% | 1.0% | 0.3% | 37.7% | 9.0% | 0.0% | 3.2% | 100.0% |
| Kagera | 33.8% | 1.1% | 16.0% | 0.0% | 42.6% | 0.0% | 5.2% | 0.0% | 1.3% | 100.0% |
| Kigoma | 23.2% | 0.0% | 1.8% | 4.5% | 48.5% | 0.0% | 1.7% | 17.5% | 2.9% | 100.0% |
| Kilimanjaro | 31.0% | 1.8% | 0.4% | 0.0% | 60.8% | 0.7% | 0.0% | 5.0% | 0.3% | 100.0% |
| Lindi | 24.1% | 12.0% | 14.5% | 6.8% | 41.2% | 0.0% | 1.1% | 0.0% | 0.3% | 100.0% |
| Mara | 28.9% | 1.5% | 11.5% | 9.8% | 39.7% | 0.4% | 2.5% | 4.9% | 0.9% | 100.0% |
| Mbeya | 28.8% | 7.9% | 1.6% | 10.2% | 37.3% | 11.8% | 1.9% | 0.4% | 0.0% | 100.0% |
| Morogoro | 16.1% | 0.5% | 15.5% | 10.5% | 24.7% | 4.9% | 25.7% | 0.8% | 1.2% | 100.0% |
| Mtwara | 22.3% | 43.2% | 2.2% | 0.0% | 29.2% | 0.0% | 2.6% | 0.0% | 0.5% | 100.0% |
| Mwanza | 29.7% | 13.8% | 2.3% | 7.9% | 41.6% | 1.9% | 1.8% | 0.0% | 0.8% | 100.0% |
| Rukwa | 25.4% | 0.0% | 12.7% | 20.7% | 0.6% | 32.2% | 3.6% | 4.8% | 0.0% | 100.0% |
| Ruvuma | 35.1% | 21.1% | 7.3% | 7.4% | 22.6% | 5.2% | 0.9% | 0.0% | 0.3% | 100.0% |
| Singida | 24.3% | 0.0% | 28.2% | 1.0% | 39.4% | 0.0% | 5.9% | 0.0% | 1.2% | 100.0% |
| Shinyanga | 31.5% | 13.5% | 6.0% | 0.0% | 35.1% | 0.0% | 6.8% | 5.6% | 1.5% | 100.0% |
| Tabora | 28.2% | 2.8% | 19.9% | 11.0% | 0.7% | 34.3% | 1.4% | 1.9% | 0.0% | 100.0% |
| Tanga | 43.1% | 0.9% | 0.1% | 0.0% | 21.7% | 32.5% | 0.9% | 0.0% | 0.9% | 100.0% |

## TABLE 6
## Expenditures of Road Fund by MWCT, by Region

| | 1993/94 | 1994/95 | 1993/94 | 1994/95 |
|---|---|---|---|---|
| | (TSh. millions) | | (Percent Distribution) | |
| Arusha | 345.5 | 330.7 | 3.8% | 2.3% |
| Coast | 309.6 | 388.4 | 3.4% | 2.7% |
| DSM HQ | 3,817.4 | 6,595.8 | 42.1% | 46.2% |
| Dodoma | 190.4 | 482.5 | 2.1% | 3.4% |
| Iringa | 162.1 | 333.1 | 1.8% | 2.3% |
| Kagera | 245.0 | 307.3 | 2.7% | 2.2% |
| Kigoma | 213.5 | 286.9 | 2.4% | 2.0% |
| Kilimanjaro | 448.7 | 287.2 | 4.9% | 2.0% |
| Lindi | 413.1 | 370.0 | 4.6% | 2.6% |
| Mara | 182.2 | 588.0 | 2.0% | 4.1% |
| Mbeya | 287.6 | 524.8 | 3.2% | 3.7% |
| Mtwara | 273.9 | 398.2 | 3.0% | 2.8% |
| Mwanza | 193.7 | 376.8 | 2.1% | 2.6% |
| Rukwa | 192.8 | 411.9 | 2.1 % | 2.9% |
| Ruvuma | 387.4 | 487.6 | 4.3% | 3.4% |
| Singida | 244.9 | 346.1 | 2.7% | 2.4% |
| Shinyanga | 219.7 | 309.8 | 2.4% | 2.2% |
| Tabora | 311.8 | 393.2 | 3.4% | 2.8% |
| Tanga | 284.7 | 459.1 | 3.1% | 3.2% |
| Morogoro | 347.9 | 611.7 | 3.8% | 4.3% |
| Total | 9,071.9 | 14,289.0 | 100.0% | 100.0% |

Compare to: (a) petrol sales; and (b) ATAP recipient areas.
Numbers are provisional; not fully audited.
Source: MWCT, Accounting Department.

**TABLE 7**
**Expenditures of Road Fund by MWCT, by Region**
**(Percent Distribution)**

| | 1991/92 | 1992/93 | 1993/94 | 1994/95 |
|---|---|---|---|---|
| Arusha | 6.9% | 3.3% | 3.8% | 2.3% |
| Coast | 6.5% | 3.4% | 3.4% | 2.7% |
| DSM HQ | 18.4% | 30.0% | 42.1% | 46.2% |
| Dodoma | 4.4% | 2.8% | 2.1 % | 3.4% |
| Iringa | 3.4% | 3.5% | 1.8% | 2.3% |
| Kagera | 3.4% | 3.8% | 2.7% | 2.2% |
| Kigoma | 3.1 % | 2.4% | 2.4% | 2.0% |
| Kilimanjaro | 4.7% | 3.2% | 4.9% | 2.0% |
| Lindi | 4.5% | 3.3% | 4.6% | 2.6% |
| Mara | 4.3% | 2.8% | 2.0% | 4.1% |
| Mbeya | 3.9% | 6.4% | 3.2% | 3.7% |
| Morogoro | 4.8% | 4.6% | 3.8% | 4.3% |
| Mtwara | 6.6% | 3.8% | 3.0% | 2.8% |
| Mwanza | 5.1% | 3.8% | 2.1% | 2.6% |
| Rukwa | 2.8% | 2.9% | 2.1 % | 2.9% |
| Ruvuma | 4.2% | 5.3% | 4.3% | 3.4% |
| Singida | 4.1 % | 3.3% | 2.7% | 2.4% |
| Shinyanga | 2.8% | 3.5% | 2.4% | 2.2% |
| Tabora | 3.3% | 3.0% | 3.4% | 2.8% |
| Tanga | 2.9% | 5.0% | 3.1% | 3.2% |
| Total | 100% | 100% | 100% | 100% |

Source: ARD Report for 1991/92 and 1992/93; consultant's calculations based on MWCT data for 1993/94 and 1994/95.

## ANNEX D-8

### TABLE 1
### Collections versus Expenditures by Region

| | Share of Expend | Share of Liters | Ratio of Expend to Liters | Surplus/ Deficit Areas |
|---|---|---|---|---|
| Arusha | 3.1 % | 7.5% | 0.41 | D |
| Coast | 3.1% | 0.9% | 3.30 | S |
| DSM | 44.1 % | 40.3% | 1.09 | |
| Dodoma | 2.7% | 3.0% | 0.91 | |
| Iringa | 2.1% | 6.6% | 0.31 | D |
| Kagera | 2.4% | 2.6% | 0.94 | |
| Kigoma | 2.2% | 1.3% | 1.70 | |
| Kilimanjaro | 3.5% | 7.6% | 0.46 | D |
| Lindi | 3.6% | 0.8% | 4.73 | S |
| Mara | 3.1% | 1.2% | 2.47 | S |
| Mbeya | 3.4% | 5.2% | 0.66 | |
| Mtwara | 2.9% | 1.8% | 1.66 | |
| Mwanza | 2.4% | 6.1% | 0.39 | D |
| Rukwa | 2.5% | 0.6% | 4.18 | S |
| Ruvuma | 3.8% | 1.2% | 3.18 | S |
| Singida | 2.6% | 0.8% | 3.40 | S |
| Shinyanga | 2.3% | 1.8% | 1.28 | |
| Tabora | 3.1% | 1.9% | 1.61 | |
| Tanga | 3.2% | 5.4% | 0.59 | |
| Morogoro | 4.1% | 3.5% | 1.15 | |

## ANNEX D-9

## TABLE 1
## Road Fund Revenue Requirements for MWCT Maintenance Budget

| | Estimated Maintenance Costs (TSh mil.) | Road Toll Tax--80% to MWCT (TSh mil.) | Toll Tax Coverage of Needs (%) | Net Funding Needs (TSh mil.) | Comm. Vehj. Lic. & Transit Charges (TSh mil.) | Resource Gap (%) |
|---|---|---|---|---|---|---|
| 1994/95 | 20,556 | 16,959 | 82.5% | 3,597 | 2,334 | 6.1% |
| 1995/96 | 20,622 | 17,638 | 85.5% | 2,984 | 2,385 | 2.9% |
| 1996/97 | 20,946 | 18,343 | 87.6% | 2,603 | 2,438 | 0.8% |
| 1997/98 | 21,660 | 19,077 | 88.1% | 2,583 | 2,492 | 0.4% |
| 1998/99 | 23,304 | 19,840 | 85.1% | 3,464 | 2,547 | 3.9% |
| 1999/00 | 25,116 | 20,633 | 82.2% | 4,483 | 2,604 | 7.5% |

**ANNEX D-10**

TABLE A

**Indicators of Improvements in Local Transport**

| INDICATORS | NJOMB 1993 | NJOMBE 1995 | SHINYNG A 1990 | SHINYNG A 1991 | KWA SAD 1990 | KWA SAD 1992 |
|---|---|---|---|---|---|---|
| ADT | 43 | 73 | 12 | 44* | 59 | 334 |
| % Increase | | 70% | | 370% | | 466% |
| **Passengers** | 356 | 582 | 5 | 28 | 66 | 1300 |
| % Increase | | 64% | | 560% | | 1870% |
| **Passengers** | TSh 40-60 per KM | TSh 19.2 per KM | na | na | TSh 15 per Km | TSh 10 per KM |
| % Decrease | | 32-68% | | na | | 30% |
| **Bicycles** | 90 | 183 | na | 357 | na | na |
| % Increase | | 103% | | na | | na |

* Estimate based on Average difference between Njombe ADT and Passenger % and Kwa Sadala ADT and Passenger % changes

TABLE B

**Vehicle Operating Costs Njombe-Makete**

| Type of Vehicle | 1993 | 1995 | % Decrease | % Decr Const 93 |
|---|---|---|---|---|
| Saloon Car | TSh 167 per KM | TSh 63 per KM | 62% | 80% |
| Pick-up | TSh 246 per KM | TSh 131 per KM | 46.7% | 70.5% |
| Lorry <5 Tons | TSh 329 per KM | TSh 173 per KM | 47.4% | 70.5% |
| Lorry >5 Tons | TSh 569 per KM | TSh 371 per KM | 34.8% | 64.1% |
| AVERAGE | TSh 328 per KM | TSh 184.5/KM | **43.75%** | **66%** |

(Exchange rates used: 1993=USD1=360 TSh 1995=USD1=600 TSh)

TABLE C

**Small Retail Businesses**
**Increases in Average Daily Sales**

| AV Daily Sales | Baseline Reported | BaselineEstimate | Impact Reported | Impact Estimate | % Incr. Reportd | % Incr. Estimate |
|---|---|---|---|---|---|---|
| Njombe 1993-5 | TSh 2820 | TSh 4750 | TSh 3500 | TSh13200 | 24% | 178% |
| Shinynga 1990-1 | TSh <3450 | TSh 4800 | TSh 3450 | TSh10000 | na(+) | 108% |

| | | | | | | |
|---|---|---|---|---|---|---|
| Kwa Sada 1990-2 | TSh 6000 | TSh 6000 | TSh13250 | TSh25000 | 121% | 317% |

TABLE D

**Average Estimated Daily Sales in Constant Baseline year Shillings**:

| | NJOMBE-MAKETE 1993/1995 | SHINYANGA 1990-1991 | KWA SADALA 1990-1992 |
|---|---|---|---|
| % Increase | 52.9% | 72% | 140% |

TABLE E

**Kwa Sadala Price Changes 1990-1992**:

| ITEM | 1990 RANGE | 1990 AVERAGE | 1992 RANGE | 1992 AVERAGE | % Change Absolute | % Change Real |
|---|---|---|---|---|---|---|
| Sugar (kg) | 180-300 | 220 | 180-220 | 200 | -10% | **-48%** |
| Oil (li) | 160-500 | 360 | 240-800 | 540 | +50% | **-14%** |
| Salt (kg) | 30-80 | 60 | 60-150 | 80 | +33% | **-25%** |
| Soap (pc) | 30-60 | 50 | 65-70 | 70 | +40% | **-24%** |
| Matches-bx | 10 | 10 | 15 | 15 | +50% | **0** |

| | | | | | | |
|---|---|---|---|---|---|---|
| Battery (1) | 60-100 | 90 | 90-150 | 120 | +33% | **-19%** |

(Source 1993: Shirima et al:74)

TABLE F

**Changes in Income: Kwa Sadala-Mbweere**

| AV HH Income<br>T Shillings | 1990 | 1992 | % Change | % Change<br>Const TSh |
|---|---|---|---|---|
| Mroma | 36,455 | 98,452 | +170% | +55.5% |
| Ngira | 144,388 | 273,973 | +89.7% | +9.2% |
| Roo | 64,045 | 114,360 | +78.6% | +2.8%* |
| Mbweera | 441,360 | 605,769 | +37.3% | -20.9%* |
| Average Totals | 171,562 | 273,138 | +59.2% | -8.3%* |

*Reflects the fall in the price of coffee 1990-1992.

TABLE G

**Njombe-Makete Houeshold Expenditures**

(For purchases of household items, food, clothes and agricultural inputs)

| | 1993<br>Est. Yrly Exp | 1995<br>Est. Yrly Exp | % Increase | % Change in<br>Const.93 TSh |
|---|---|---|---|---|
| Njombe | TSh 42,700/yr | TSh 67,756/yr | 58.6% | -5% |

TABLE H

**Estimated Potential Employment Creation:**
**Labor-based Roadworks in IRP**
**(for unpaved rural roads)**

| | **For Unpaved Rural Roads** |
|---|---|
| Road Network IRP I (50%) | 1500 KM |
| Road Network IRP II | 1200 KM |
| **TOTAL KM** | **2700 KM** |
| TOTAL Potential Worker-years<br>(250 workdays per year)<br>Spot Improvements<br>Full Improvements | <br>1928 worker years<br><br>5783 worker years |
| **TOTAL Potential Worker Years** | **7711 worker years** |

(Source: URT/MWCT/ATATAP-1995)

Table J

**Percentage Change in Numbers of Local Businesses**

(Clubs, retail, bars, carpentry, mechanics, etc)

| All Businesses in: | % change | Baseline total | Impact total |
|---|---|---|---|
| Njombe-Makete | **-28.6%** | 255 | 182 |
| Kwa Sadala-Mbweera | **+102%** | 123 | 249 |

TABLE K

**Percentage Change in Numbers of Local RETAIL Businesses**

| Retail Businesses in | % Change | Baseline total | Impact totals |
|---|---|---|---|
| Njombe-Makete | **-11%** | 53 | 47 |
| Kwa Sadala-Mbweera | **+15%** | 54 | 62 |

TABLE 5.1

**Agricultural Production Indicators**

| **LOCATION** | **CROP** | **INDICATOR** | **CHANGE** |
|---|---|---|---|
| Njombe | cabbage | acreage under cultivation '93-95 | **+57%** |
| | wheat | sales to outside traders | **up** |
| | potatoes | sales to outside traders | **up** |
| | maize | sales to outside traders | **up** |
| | ulanzi/pombe | number of local clubs | **-53%** |
| | pyrethrum | acreage to be planted '95-96 | **up** |
| Shinyanga | cotton | sales 1989-1991 (tons) | **+78%** |
| Kwa Sadala | coffee | production 1991-1992 (kg)* | **+149%** |
| | bananas | production 1990-1992 (tons) | **+21%** |
| | green beans | new cash crop 1991: production increase 1991-92 (tons) | **+209%** |
| | tomatoes | production 1990-92 (tons) | **+100%** |
| | vegetables | production 1990-1992 (tons) | **+154%** |

*(recovery after severe dip--comparison 1990-1992 shows +13% )

**Production and sales of green beans have significantly offset problems of declining coffee prices and in 1992 green beans were estimated to have

brought in 47% more money than coffee.

## Kwa Sadala Increases In Vegetable Cash Cropping 1990-92

| KWA SADALA CROPS | 1990 Tons | 1990 US$000 | 1991 Tons | 1991 US$000 | 1992 Tons | 1992 US$ |
|---|---|---|---|---|---|---|
| Green Beans | 0 | 0 0 | 174.3 | 354.4 | 538.6 | 1093.5 |
| Tomatoes | 573 | 181 | 398 | 82.9 | 1146 | 173.6 |
| Vegetables | 152 | 24 | 257 | 7.8 | 386 | 914 |
| **US$ TOTALS** | | **205** | | **445.1** | | **2181.1** |

TABLE 5.2

## Health Care Indicators

**Perceived changes from baseline year to impact study year**

| HEALTH CARE INDICATORS (staff survey) | Njombe | Shinynga | Kwa Sad |
|---|---|---|---|
| Has daily attendance at health facility increased? | YES-priv NO-govt | NO | YES |
| Has health facility staff increased? | YES | NO | YES |
| Staff see significant impact of road? | YES | NO | YES |

TABLE 5.3

## Health Care: Household Opinion Surveys

| HEALTH: Opinion Survey | NJOMBE Better | NJOMBE Same | SHNYGA Better | SHNYGA Same | KWA Better | KWA Same |
|---|---|---|---|---|---|---|
| Is Family Health.... | -- | yes | 38% | 53% | 67.5% | 20% |
| Access to Health Care | yes | -- | 34% | 29% | 52.5% | 25% |

## Health Care and Road Impact: Household Opinion Surveys

| ROAD IMPACTS HEALTH?: Opinion Survey | NJOMBE* yes | NJOMBE no | SHNYGA yes | SHNYGA no | KWA yes | KWA no |
|---|---|---|---|---|---|---|
| Family Health? | na | -- | 9% | 91% | 0* | 100% |
| Access to Health Fac. | yes | -- | 15% | 85% | 0 | 100% |

* Question not asked in Njombe surveys.

** BUT note that of 67.5% above note that family health is better as a consequence of improved access to health care.

TABLE 5.4

**Health Care Conditions: Changes since Baseline Studies**

| BASELINE WHERE? | HEALTH CHANGES NOTED SINCE COMPLETION OF ROADWORKS |
|---|---|
| NJOMBE-MAKETE | 30% Increase in Private Hospital/clinic Attendance |
| | 30% Increase in funding for private hospitals (RC) |
| | 70% Decrease in Government Hospital Attendance: ease of transport to 2 competing private hospitals cited. |
| | Fewer perceive health as being bad than prior survey |
| | Family Planning Clinics report greater numbers of women coming from greater distances for condoms/birth control |
| | Seeking health care[38] cited as most frequent reason for use of road by 50% of men and 60.2% of women |
| | Ability to easily transfer emergency and referral patients to better equipped facilities cited by health workers as a key improvement. |
| SHINYANGA | Very few impacts noted-no increase in supply of drugs or in daily attendance (are government clinics only) |
| | 38% of Households believe their health has improved |
| | 15% of Households see the road as positive impact |

[38] Seeking health care defined as treatment for self or immediate family member as well as assisting/visiting sick relations in hospital/clinic.

| | |
|---|---|
| KWA SADALA | Ability to easily transfer emergency and referral patients to better equipped facilities cited by health workers as a key improvement. |
| | Improved health education |
| | Improved access to drugs via church hospitals/clinic<br>(More expensive than gov't, but ARE available) |
| | Improved access to Family planning (condoms, etc.) |
| | 68% of households cite better access to services, health education and drugs (via church health centers) as key to their improved health status vis-a-vis 1990. |
| | Improved delivery of hospital supplies |
| | Private hospitals/clinics report an increase in attendance and staffing since the road was improved |
| | Government hospitals/clinic report no increase in attendance but increased staffing since the road was improved (were not asked if attendance had fallen). |

TABLE L

**Other Donor Activity**

**Road Improvements Enhancing Development Efforts**

| LOCATION | DONOR GROUP | AREA OF FOCUS |
|---|---|---|
| Njombe-Makete | DANIDA/HIMA | agriculture & soil conservation |
| | DANIDA/MAJI | water provision |
| | SDC/SSDDP | dairy development |
| | UNICEF | health-child survival and maternal health |
| | NORAD | education-secondary school teachers |
| | Catholic Ch. | health, water, education, agriculture<br>skills devel (carpentry, nursing, etc). |
| | Lutheran Ch. | health, water, education, dairy (Heifers in Trust) afforestation (seedling devel) |
| | ILO | labor-based maintenance of roads and footpaths, rural transport (donkeys & hand carts) |
| | DVS | rural transport-training of mechanics |
| | German VS | education-teachers to secondary schools<br>agriculture-farm managers/advisors to secondary schools |
| | IFAD | agriculture-Southern Highland Extension and Rural Financial Services Project |
| Shinyanga | Netherlands | agriculture-assistance to cotton industry<br>water rehab-wells rehabilitation |

| | | |
|---|---|---|
| | OXFAM | health-primary health care education |
| | HASH | soil conservation promotion. |
| | UNJCGP | health & FP; nutrition, water & sanitation;afforestation, food for work |
| Kwa Sadala | DANIDA/MAJI | water provision |
| | Lutheran Ch. | health care provision-clinics<br>dairy development |
| | SDA Church | health care provision-clinic |